Tender No. BMRCL/2025-26/OW/WORK_INDENT/128

Driving Bangalore Ahead

Bangalore Metro Rail Corporation Limited (BMRCL)

Bangalore Metro Rail Project, Phase-2

Tender Document

Name of work: **Planning, Designing & Execution of Area Development, Horticulture & Landscaping Works in Kothnur Depot of Bangalore Metro Rail Project, Phase-2**

April 2026

BANGALORE METRO RAIL CORPORATION LIMITED
III Floor, BMTC Complex, K H Road,
Shanthinagar, Bangalore – 560 027
Karnataka, India

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Bangalore Metro Rail Corporation Limited (BMRCL)

Name of Work: Planning, Designing & Execution of Area Development, Horticulture & Landscaping Works in Kothnur Depot of Bangalore Metro Rail Project, Phase-2**.**

File No. eoffice-291158

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SECTION-A: NOTICE INVITING TENDER (NIT)

Bangalore Metro Rail Corporation Limited (BMRCL) invites **e-tenders** online through the Karnataka Public Procurement Portal (KPP Portal) (**https://kppp.karnataka.gov.in**) from the eligible tenderers who fulfils the prescribed Eligibility cum Qualification Criteria (EQC) for the proposed work of "**Planning, Designing & Execution of Area Development, Horticulture & Landscaping Works in Kothnur Depot of Bangalore Metro Rail Project, Phase-2"** in Bangalore**.**

1. **KEY DETAILS OF TENDER:**

1	Tender Number	BMRCL/2025-26/OW/WORK_INDENT128
2	Estimated Contract Value (ECV)	**₹ 100.81 Lakhs (excluding GST)**
3	Tender Processing Fees	Shall be paid online through KPP Portal for the requisite amount as shown/displayed there in the KPP Portal (Refer ITT Clause 3.2)
4	Tender Security (EMD) Amount	**₹ 2.00 lakhs** (Bank Guarantee/ Insurance Surety Bond shall be valid 60 days beyond the tender validity period, Refer ITT Clause 13)
5	Completion Period of Work	**17 months** (including monsoon)
6	Tender Documents available for download on the website (**https://kppp.karnataka.gov.in)**	08.04.2026 (10.00 AM) to 07.05.2026 (3.00 PM)
7	Site visit (will be facilitated by BMRCL)	21.04.2026 (14.00 PM)
8	Pre-Bid Meeting	22.04.2026 (11.00 AM)
9	Last date & time for seeking tender queries/ clarifications online through the KPP Portal.	23.04.2026 (up to 05.30 PM)
10	Authority and address for making Communications, Pre-Bid Meeting, seeking clarifications, submission of **original** Tender Security (EMD) documents and opening of e-tenders etc.	General Manager (Contracts), Bangalore Metro Rail Corporation Limited, Annex-1, Project & Planning 4th Floor, BMTC Complex, KH Road, Shantinagar, Bangalore-560027, Karnataka, India **Email: contracts@bmrc.co.in**
11	Due Date & Time for offline submission of **Original** Bank Guarantee/ Insurance Surety Bond towards Tender Security (EMD).	07.05.2026 (from 3.00 PM) to 11.05.2026 (up to 5.30 PM) (By Person/ Post/ Courier, Refer ITT clause 13).
12	Last Date & Time for receipt of e-tender on KPP Portal (online only)	07.05.2026 (up to 3.00 PM)
13	Date & Time for opening of Technical Bid (online only)	08.05.2026 (3.30 PM)
14	Bid validity period	**120 days** from the prescribed last date of submission of e-Tender. (Refer ITT Clause 12)
15	Date & Time for opening of Price Bid (BoQ). (online only)	Date & Time of opening of Price Bid (BoQ) will update & notify on KPP Portal after completion of evaluation of Technical Bids.

16	e-procurement portal (website) for download of tender documents, submission of tender queries, submission of tenders & other communications	**https://kppp.karnataka.gov.in** (herein after referred as KPP Portal)
17	Tender type & Evaluation system	Open Tender with Two Cover Evaluation System (**Percentage tender**)

2. **REGISTRATION OF BIDDERS ON KPP PORTAL:**

a) Tenderers are required to enroll on the Karnataka Public Procurement Portal (https://kppp.karnataka.gov.in/) by clicking on the link "Registration" on the Karnataka Public Procurement Portal and by paying requisite registration fee.

b) As part of the enrolment process, the Tenderers will be required to choose a unique user name to assign a password for their accounts.

c) Tenderers are advised to register their valid email address and mobile number as part of the registration process. These would be used for any communication with the Tenderer.

d) Upon enrolment, the Tenderers will be required to register their valid Digital Signature Certificate (Only Class III Certificates with signing + encryption key usage) issued by any Certifying Authority recognized by CCA India.

e) Only one (01) valid DSC should be registered by a Tenderer. Please note that the Tenderers are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.

f) Tenderers should then login to the website through the secured log-in by entering their user ID/password and the password of the DSC / e-Token.

g) The scanned copies of all original documents (as required) should be uploaded on KPP portal in **PDF/JPG format**.

h) For any query regarding e-Procurement on the Karnataka Public Procurement Portal, contact helpdesk number: +91-8046010000, +91-8068948777, and Email ID: support@eprochelpdesk.com.

3. **SEARCHING/ SUBMISSION OF e-TENDERS on KPP PORTAL:**

a) Once the Tenderers have selected the desired Tender on the KPP Portal and if they are interested to participate in the bidding process, the Tenderers shall pay a non-refundable tender processing fee through online for the requisite amount as shown/displayed in the KPP Portal. However, more information for searching/ submitting Bids online on the KPP Portal may be obtained at https://kppp.karnataka.gov.in.

b) Tenders must be submitted electronically through Karnataka Public Procurement Portal (KPP Portal) (https://kppp.karnataka.gov.in/) before the last date & time prescribed in the KPP Portal using a valid DSC (Digital Signature Certificate). The authorized signatory of the tenderer should have valid Power of Attorney (PoA)/Board Resolution and valid Class-III digital signature Certificate (DSC). The authorized signatory of bidder is required to fill & complete all fields of General Conditions of Eligibility, Pay tender processing fees & Tender Security (EMD), upload scanned copies of relevant supporting documents in respect of Technical Qualification Criteria, to fill & complete the Price bid (BoQ) and upload the scanned copies of all other tender forms after duly completed/ filled in and signed by the authorized signatory as per tender requirements electronically on the KPP Portal, using a valid Digital Signature Certificate.

4. The scope of the proposed work is provided in the Tender Documents like Employers Requirements (scope of work), Technical Specifications, Drawings, Bill of Quantity (BoQ) etc. The interested Bidders is advised to go through all the sections of Tender Documents like the Notice Inviting Tender (NIT), Instructions to Tenderers (ITT), Eligibility cum Qualification Criteria (EQC), General Conditions of Contract (including Contract Data), Special Conditions of Contract, Employers Requirements (scope of work), Technical Specifications, Tender Drawings, Price Bid (BoQ) etc. including all the prescribed tender forms for preparing & submission of a valid & competitive Bid.

5. Tenders must be accompanied by a **Tender Security (EMD)** as specified in ITT clause 13, drawn in favour of "Bangalore Metro Rail Corporation Ltd" payable at Bengaluru. All Tenderers are requested to note that the **original Bank Guarantee/ Insurance Surety Bond** towards Tender Security as instructed under ITT clause 13, shall be submitted in BMRCL office within the due date & time stipulated for the same in NIT. Tender submission on KPP Portal without submission of such original documents physically at BMRCL office shall be liable for rejection.

6. Submission of e-tenders shall be closed at the prescribed last date & time for submission, after which no e-tender will be accepted by KPP Portal. Tenders cannot be submitted online after the stipulated last date & time of submission of Tender. Hence it is the responsibility of the Tenderer to ensure that their Tender is submitted before the deadline for submission of tender. BMRCL will not be responsible for non-receipt of Tender due to any delay and/or loss etc. BMRCL will not be held responsible for consequential damages/losses due to lack /interruption of power supply & internet, low speed of internet, System problems, loss of electronic information/data etc. while submission of tender on KPP Portal.

7. The Tenderer shall provide credentials in support of their eligibility cum qualifying criteria towards technical and financial capabilities by valid supporting documents / client certificates / CA's audit reports etc. as set forth in the Tender Documents.

8. All Tenderers are hereby cautioned that Tenders shall be submitted without any deviation, alteration or modification. Tenders containing any deviation from contractual terms and conditions, specifications and other tender requirements shall be considered as non-responsive and shall be liable for rejection.

9. The submission of e-tender on KPP Portal is CONDITIONAL subject to receipt of tender processing fees & Tender Security on or before the due date & time stipulated for the same.

10. BMRCL reserves the right to accept or reject any or all Tenders in 'Part 'or 'Full' without assigning any reason. No Tenderer shall have any cause of action or claim against BMRCL for rejection of their Tender.

11. For further clarifications/ details, contact The General Manager (Contracts), Bangalore Metro Rail Corporation Limited (BMRCL), Annex-1, Project & Planning, 4th Floor, BMTC Complex, KH Road, Shantinagar, Bangalore-560027, Karnataka, India, Telephone No. 080-22969300 and Fax No: 080-22969222, Email: contracts@bmrc.co.in.

12. The Tenderers are also advised to frequently check the KPP Portal (website) https://kppp.karnataka.gov.in for further updates on this tender like for any amendments /Addendum / Corrigendum etc.

General Manager (Contracts)
(On behalf of the Executive Director (Civil))
Bangalore Metro Rail Corporation Limited

SECTION-B: INSTRUCTIONS TO TENDERERS (ITT)

Clause No.	Description
A. GENERAL	
1.0	Introduction
2.0	Information & Requirements
3.0	Cost of Tendering
4.0	Site Visit
B. TENDER DOCUMENTS	
5.0	Contents of Tender Documents
6.0	Clarification on Tender Documents
7.0	Amendment to Tender Documents
C. PREPARATION OF TENDERS	
8.0	Language of Tender
9.0	Composition of Tender Submittals
10.0	Tender Price
11.0	Currencies of the Tender
12.0	Tender Validity
13.0	Tender Security (EMD)
14.0	Format and Signing of Tenders
D. SUBMISSION OF TENDERS	
15.0	Submission of Tenders
16.0	Failure to submit tenders in time
17.0	Modification and withdrawal of tenders
E. TENDER OPENING AND EVALUATION	
18.0	Tender Opening
19.0	Process to be Confidential
20.0	Clarification of Tenders
21.0	Determination of Responsiveness
22.0	Evaluation of Tender
F. AWARD OF CONTRACT	
23.0	Award Criteria
24.0	Employer's Right to Accept any Tender and to Reject any or All Tenders
25.0	Notification of Award
26.0	Signing of Contract Agreement
27.0	Performance Security
28.0	Annulment of the award
29.0	Completion Period
30.0	Appeal
31.0	Contact Person in the BMRCL Office

SECTION-B: INSTRUCTIONS TO TENDERERS (ITT)

Name of Work: Planning, Designing & Execution of Area Development, Horticulture & Landscaping Works in Kothnur Depot of Bangalore Metro Rail Project, Phase-2.

Bangalore Metro Rail Corporation Limited (BMRCL) invites **e-tenders** online through the Karnataka Public Procurement Portal (KPP Portal) (**https://kppp.karnataka.gov.in**) from the eligible tenderers who fulfils the prescribed Eligibility cum Qualification Criteria (EQC) for the above mentioned work.

A GENERAL

1.0 INTRODUCTION

1.1 **Bangalore Metro Rail Corporation Limited (BMRCL)**

The Bangalore Metro Rail Corporation Limited is a Joint venture enterprise of the Government of India and the Government of Karnataka, entrusted with the responsibility of implementation of the Bangalore Metro Rail project.

1.2 **Project**

Phase-2 of the Bangalore Metro Rail Project consists of Four Extensions to the existing lines of Phase-1 and Two New Lines (Reach-5 & Reach-6) with a total length of 72.095 km with 61 stations (49 Elevated and 12 Underground) of which 53.80 Km is under operation and the balance is under construction.

2.0 INFORMATION & REQUIREMENTS

2.1 The tenderers should submit the tender as a Single Entity only and shall meet the Eligibility and Qualification Criteria specified in Clauses 2.0 and 3.0 of the Eligibility cum Qualification Criteria (EQC).

2.2 Joint venture/ Consortium is not allowed in this tender.

3.0 COST OF TENDERING.

3.1 The Tenderer shall bear all costs associated with the preparation and submission of his Tender and BMRCL shall in no case be responsible or liable for these costs, regardless of the conduct or outcome of the Tender process.

3.2 Tenderers shall pay a non-refundable **tender processing fee** through online mode for the requisite amount as shown/displayed in the KPP Portal. If the Bidder fails to pay Tender processing fees through online mode, such Bids will be liable for rejection. Charge back of any duplicate successful tender processing fees shall be initiated only after expiry of tender validity period.

4.0 SITE VISIT

4.1 BMRCL will facilitate a site visit on the date and time specified in the Notice Inviting Tender (NIT). Prospective tenderers must submit the details of their representative(s) (a maximum of two) to the Site Visit Coordinator's email address provided below, at least one day in advance. The submission deadline is 11:00 Hrs on the day preceding the scheduled site visit date. For further coordination in connection with site visit, please contact the following BMRCL official:

Site Visit Coordinator: Mr. M S Dhananjaya Murthy
Dy. Chief Engineer
'murthymsd@bmrc.co.in'
Mobile: +919449874429

4.2 Any site information provided in this Tender document is for the tenderers general guidance only. The Tenderer shall be responsible for visiting and examining the Site of Works and its surroundings at their own risk & cost, and for obtaining all information necessary for the preparation of the Tender and the execution of Contract.

Permission for the tenderer to enter up on the Employers premises & lands shall be deemed to have been granted on the express condition that the Tenderer, its personnel, and agents shall indemnify and hold harmless the Employer, its personnel, and agents from and against all claims, liabilities, costs and expenses whatsoever including but not limited to any death, personal injury or loss of or damage to property arising out of or in connection with such site visit.

4.3 The Tenderer shall be deemed to have inspected the Site and its surroundings and all relevant conditions, including sources of various materials, access roads, environmental factors, and time related restrictions and to have accepted full responsibility for the implications thereof. No claim whatsoever shall be entertained on the grounds of lack of knowledge or ignorance of such site conditions.

B. TENDER DOCUMENTS

5.0 CONTENTS OF TENDER DOCUMENTS

5.1 The Tender Documents as listed below have been prepared for inviting tenders:

Section	Description
Section -A	Notice Inviting Tender (NIT)
Section -B	Instructions to Tenderers (ITT)
Section -C	Eligibility cum Qualification Criteria (EQC)
Section -D	Form of Tender (Including Attachments)
Section -E	General Conditions of Contract (including Contract Data)
Section -F	Special Conditions of Contract
Section-G	Contract Forms
Section-H	Employer's Requirements -Scope of work
Section-I	Technical Specifications
Section-J	Tender Drawings
Section-K	Safety, Health & Environment (SHE) Manual
Section-L	Price Bid (BoQ) and Preamble to Price Bid

5.2 The Tenderer is expected to examine carefully all instructions, forms, terms, conditions, specifications, and other contents of the Tender Documents, and take them into account fully before submitting the Tender. Failure to comply with any of the requirements or provisions set forth in the Tender Documents shall be entirely at the Tenderer's own risk

6.0 CLARIFICATION ON TENDER DOCUMENTS

6.1 While all efforts have been made to avoid errors in the drafting of Tender documents, the Tenderer is advised to check the same carefully and seek clarifications within the scheduled period only. No claim on account of any errors detected in the Tender documents later shall be entertained.

6.2 The tenderer shall submit/upload any tender query/clarification through the KPP Portal not later than the last date of seeking clarification as mentioned in NIT**.** Clarifications sought through the KPP Portal will only be considered**.**

6.3 A Pre-Bid Meeting will be held on the date and time specified in the NIT. The meeting will be accessible via video conference. To receive the virtual meeting link and access credentials (e.g., software, meeting ID, password), all prospective bidders must provide the details of their representative(s) (a maximum of two) by sending the information to the official email of GM (Contracts), BMRCL, at **contracts@bmrc.co.in**. These details must be provided at least one day in advance, no later than 17:00 Hrs on the day preceding the date of pre-bid meeting.

Non-attendance at the Pre-bid meeting will not be a cause for disqualification of a Tenderer

6.4 Response in writing for the Clarifications sought through the KPP Portal will be made available at the KPP Portal. Bidders are advised to visit the KPP Portal frequently.

6.5 Tenderers to note that seeking clarification regarding qualification shall only be for criteria set for Eligibility and Qualification. Bidders has to read the tender document completely and understand the requirement on their own and employer will not advice any prospective tenderer regarding participation in this tender. Employer reserves the right not to reply to presumptive or hypothetical queries.

7.0 AMENDMENT TO TENDER DOCUMENTS:

7.1 Before the deadline for submission of Tenders, the Employer may issue further instructions to Tenderers or any modifications to existing Tender documents in the form of an addendum & corrigendum. Such an amendment in the form of an addendum/corrigendum will be made available on the KPP Portal. Bidders are advised to visit the KPP Portal frequently.

7.2 Without prejudice to the order of preference as specified in Clause 1.5 of the General Conditions of Contract and Contract Data, the provisions in such addenda and/or corrigenda shall take priority over the Tender Documents issued previously.

7.3 To afford Tenderers reasonable time for preparing their Tenders after considering such amendments, the Employer may, at his discretion, extend the deadline for the submission of tenders in accordance with ITT Clause 15.0.

C. PREPARATION OF TENDERS

8.0 LANGUAGE OF TENDER: All Tenders and all accompanying documents shall be in the English language. In the event that any printed literature or document submitted by the Tenderer is in a language other than English, it shall be accompanied by an accurate English translation. For the purpose of interpretation and evaluation of the Tender, the English version shall prevail.

9.0 COMPOSITION OF TENDER SUBMITTALS

9.1 The Tenderer's tender submittals shall comprise (a) Technical Bid (Cover-1) containing the documents listed in ITT clause 9.2 and (b) Price Bid (BoQ) (Cover-2) containing the Bidders duly filled & completed BoQ (i.e. financial offer/ quote) as per ITT clause 9.4.

9.2 **TECHNICAL BID** (Cover-1)

9.2.1 The Tenderer shall pay requisite tender processing fees on line through KPP Portal, fill & complete all the General Conditions of Eligibility made available in KPP Portal, submit/upload scanned copies (.pdf) of all the Technical Qualification Criteria Documents and other Bidding documents duly completed/ filled-in as per tender requirements online on the KPP Portal, which shall mainly comprise of the following (but not limited to):

(a) General Conditions of Eligibility:

The Tenderer shall mandatorily fill & complete all the General Conditions of Eligibility as made available in KPP Portal before proceeding to upload the Qualification Criteria & other Bidding documents mentioned below.

(b) Qualification Criteria Documents:

(i) Copy of Tender Security (EMD) as per ITT clause 13

(ii) Copy of Power of Attorney and/or Board Resolution for authorised signatory as per ITT clause 14

(iii) Form of Tender, including all attachments, shall be complete without any alterations to their original content/ format.

(iv) Documentary evidence/ qualification documents required to establish the Tenderer's qualifications under Eligibility cum Qualification Criteria.

(v) Any other documents requested in the tender document as a part of the Technical Bid.

(c) Other Bidding Documents:

(i) Memorandum/ Articles of Association and Certificate of Incorporation or Partnership Deed or Proprietorship details (constitution of the legal entity)

(ii) GST registration certificate

(iii) PAN Card

(iv) Cancelled Bank cheque showing the Bank Account details

9.2.2 The technical bid must have all pages sequentially numbered, with an index sheet indicating the corresponding page numbers. Tenderers may note that submission of a downloaded copy of the tender documents from the KPP Portal is not required.

9.3 **No information relating to Financial Terms of service, conditions, or prices should be included in the Technical bid**. Any such violation will result in the rejection of the Tender.

9.4 **PRICE BID (BoQ)** (Cover-2)

The tenderer shall quote the tender premium in **PERCENTAGE** (at par/ Excess / Less on estimated total amount) online on the KPP Portal for each sub-estimate/ schedule / Item as applicable/ shown in the Price Bid-Bill of Quantities (BoQ) made available in KPP Portal. As such, the Tenderer shall fill in and complete the Bill of Quantities (BoQ) in Price Bid online on the KPP Portal subject to ITT clause 10.0 below. However the Bidder shall note that no hard copy of financial offer/ quote shall be attached or disclosed elsewhere.

9.5 The list of documents to be submitted, as described under ITT Clause 9.2 & 9.4 has been provided solely for the convenience of the Tenderer. Any omission or oversight in this list shall not relieve the Tenderer of the responsibility to thoroughly review all provisions of the Tender Documents and to submit all information and documents specifically required or implied therein.
BMRCL shall not take cognizance of, nor be bound by, any additional information or documents submitted by the Tenderer if, in the opinion of BMRCL, such information is not required or is likely to materially affect the tendering process.

10.0 TENDER PRICE

10.1 The Tenderers Quoted Price i.e. total financial offer shall be governed by Tender documents as described under ITT Clause 5.1. The Tenderer shall be responsible for the whole work as described in the 'scope of work' in Employer's Requirements, Technical Specifications, Tender Drawings and Price Bid-Bill of Quantities etc.

10.2 The Tenderers Quoted Price i.e. total financial offer shall include all applicable taxes, duties, cess, royalties, and statutory levies as per the laws in force as on last day of the month previous to the month of invitation of this tender, **except Goods and Services Tax (GST)**. **BMRCL will reimburse GST to the Contractor** based on the output GST levied on works contract services corresponding to the taxable value of the works executed and duly remitted by the Contractor. BMRCL will make this reimbursement upon receipt of a valid GST-compliant tax invoice submitted along with the Contractors Bills.

10.3 The Quoted Price (exclusive of GST) remains firm and binding for the entire duration of the Contract, including any extensions, and does not vary due to input cost fluctuations or changes in tax laws or tax rates. However, notwithstanding to this, the Employer will allow adjustments to the Quoted Price only under the provisions relating to "Change in Law" as specified in Sub-Clause 11.1.1 of the General Conditions of Contract (GCC).

10.4 The Tenderers shall keep the contents of their Tender and the amount quoted by them confidential.

11.0 CURRENCIES OF THE TENDER: Tender prices shall be quoted in Indian Rupees (**₹)** only.

12.0 TENDER VALIDITY

12.1 The Tender shall remain valid and open for acceptance for a period of **one hundred and twenty (120) days,** both days inclusive i.e., from the last date for submission of Tenders as specified in the Notice Inviting Tender (NIT) (or as amended, if applicable) up to the last date of the validity period.

A tender valid for a shorter period than required shall be considered non-responsive and rejected by the Employer.

12.2 In case, it becomes unavoidable, and before the expiry of the original Tender Validity period, the Employer may request the Tenderers, in writing, to extend the period of Tender Validity for a specified duration.

A Tenderer may refuse such a request without forfeiting its Tender Security. However, a Tenderer who agrees to the request shall not be permitted to modify or alter any part of its Tender, including the quoted prices or terms.

13.0 TENDER SECURITY (EMD)

13.1 The Tenderer shall furnish along with their tender, a Tender Security (EMD) for the value indicated in NIT in the form an irrevocable & unconditional **Bank Guarantee** (in physical form or e-BG) **or Insurance Surety Bond** drawn in favour of **Bangalore Metro Rail Corporation Limited** and **payable & extendable anywhere in India;** in the prescribed form given in Form of Tender (Section-D).

In case of Bank Guarantee (in physical form or e-BG), it shall be issued by an Indian Scheduled Bank or from a Scheduled Foreign bank (as defined in Section 2 (e) of RBI Act 1934), excluding Co-operative Banks. In the case of a Foreign Bank having no branch in India, the BG shall be accompanied by a counter-guarantee from a scheduled Bank in India.

In case of Insurance Surety Bond, it shall be issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI).

The Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond **shall be valid for a period of 60 days beyond the tender validity period** including any extensions under ITT clause 12.2 and shall have been issued prior to tender submission deadline (in case of e-BG, it shall be accessible on the NeSL portal at that time).

The Bank that is issuing the BG shall be on the "Structured Financing Messaging System (SFMS)" platform. Separate advice of the BG shall be sent by the issuing Bank to the Employer's Bank through SFMS to ensure a secure BG. For "SFMS" the following details are to be considered:

(i) Name: BANGALORE METRO RAIL CORPORATION LIMITED
(ii) Name of the Bank: BANK OF INDIA
(iii) Branch: CANTONMENT BRANCH, BENGALURU.
(iv) Account No. 840420110000760
(v) RTGS/IFSC: BKID0008404

Copy of Bank Guarantee along with a copy of MT760COV (for Bank Guarantee message) / MT767COV (for Bank Guarantee amendment message) report sent by the issuing Bank shall be submitted by the tenderer as a part of their Bidding documents on KPP Portal.

For issuance of e-BG on the NeSL Portal, the following details shall be considered by the tenderer:

(i) PAN of BMRCL (Beneficiary): AAACB4881D
(ii) E-mail ID of Beneficiary: contracts@bmrc.co.in
(iii) Tender reference No.: (as mentioned in NIT)

13.2 The tenderer is required to upload the scanned copy of Tender Security (Paid in the form of Bank Guarantee/ Insurance Surety Bond) on KPP Portal and **it is mandatory to submit the Tender Security (EMD) document in Original** to the General Manager (Contracts) at the address as mentioned in NIT (**by Person/ Post/ Courier**) duly mentioning the Tender number and Name of work on the top of a sealed cover within the due date & time stipulated for the same in NIT.

In case of any mismatch between the copy of tender security document uploaded in KPP Portal and the original Tender Security submitted by the tenderer within due date, the Original tender security document only will govern.

13.3 The tender will be summarily rejected by the Employer in case;

(i) If the prescribed Tender Security amount in the form of **Bank Guarantee or Insurance Surety Bond** in **Original** is not received by the General Manager (Contracts), within the due date & time stipulated for the same in NIT.

(ii) If the prescribed Tender Security amount in the form of e-BG is not received by BMRCL or not accessible to BMRCL in the relevant portal, and if 'e-BG' is issued after the tender submission deadline.

(iii) If the prescribed Tender Security is from any source other than an Indian Scheduled Bank and Scheduled Foreign Bank (as defined in Section 2 (e) of RBI Act 1934).

(iv) If the prescribed Tender Security is from any source other than Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI).

(v) If the Tender Security is from a Co-operative Bank.

(vi) If the Tender Security amount is less than the prescribed amount mentioned in NIT.

(vii) If the Tender Security's validity is shorter than the Tender validity as mentioned in ITT Clause 12.

13.3.1 In case Tender Security is in the form of a Bank Guarantee or Insurance Surety Bond, and if validity fulfills the 'Tender Validity Period', but deviates from the prescribed period of 'Tender Security Validity', the Employer shall request such Tenderer(s) in writing to submit a compliant Tender Security within 07 (seven) days from the date of such request. Failure to provide a compliant Tender Security within the specified period shall cause the rejection of the bid and Bid will be considered non-responsive.

13.3.2 Where the Employer, in its sole discretion, extends the deadline for submission of Bids in accordance with ITT Clause 15.5, after commencement of Bid submission on the KPP Portal, any Bid already submitted shall remain valid, subject to compliance with the revised Tender Security Validity Period. In the event that the Tender Security submitted with such Bid does not conform to the revised tender validity period requirements, if necessary, the Employer shall notify the concerned Tenderer in writing and require submission of a compliant Tender Security within Seven (7) working days from the date of issue of such notice.

13.4 Tender Securities of the non-responsive or unsuccessful bidders will be returned in accordance with ITT clause 22.1.7 or 25.3 as the case may be.

13.5 The Tender Security of the Successful Tenderer shall be returned upon the Tenderer executing the Contract Agreement after furnishing the required performance security as per the Contract.

13.6 The tender security shall be forfeited;

(a) if a Tenderer withdraws his tender during the period of tender validity;

(b) if the tenderer does not accept the correction of his Quoted Prices in terms of ITT Clause 22.2.4;

(c) if a tenderer misrepresents or omits the facts to influence the procurement process.

(d) in the case of a successful tenderer if he-fails to;

(i) Furnish the necessary performance security.
(ii) Enter into Contract within the time limit specified.

13.7 No interest will be payable by the Employer on the Tender Security amount cited above.

14.0 FORMAT AND SIGNING OF TENDERS

14.1 The tender shall be submitted online using the class-III digital signature certificate of the authorized signatory of the tenderer. The tender must be signed by the person holding Power of Attorney duly authorized to sign as follows:

(a) In the case of a Proprietary firm, the Power of Attorney shall be duly signed by the Proprietor.

(b) In the case of a Partnership Firm, the Power of Attorney shall be duly signed by all the Partners OR the Partner/Partners holding the Power of Attorney. A copy of Partnership deed should be submitted.

(c) In the case of Private/Public Companies/ Limited Liability Partnership (LLP), a Power of Attorney from the Legal Representative of the Company who has been authorized by the Board of Directors through resolution to sign on behalf of the Company. Copy of Board Resolution, Constitution of the Legal Entity, Articles of Incorporation, or other valid legal instruments shall also be submitted.

14.2 Documents submitted in Tender submissions shall contain no alterations, omissions, or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialed and dated by the person or persons signing the tender before scanning and uploading in KPP Portal.

14.3 All witnesses and sureties shall be persons of status and probity and their full name, occupation, and address shall be written below their signatures.

14.4 Cancellation or creation of a document such as Power of Attorney, Partnership deed, Constitution of Firm, etc., which may have bearing on the Tender/Contract, shall be communicated forthwith in writing by the Tenderer to the General Manager (Contracts)/Engineer and the Employer.

14.5 General Power of Attorney (GPA) is also acceptable in place of Power of Attorney. GPA should contain the power of signing the Tender given by the Board of Directors. The said GPA should have come into force before the last date & time of submission of the Tender.

D. SUBMISSION OF TENDERS

15.0 Submission of Tenders

15.1 The tenderer shall submit/ upload their tender i.e. Technical Bid and Price Bid (BoQ) respectively online through the KPP Portal before the closing date & time indicated in NIT or as mentioned in subsequent addendum/corrigendum. The Technical Bid and Price Bid (BoQ) shall be complete in line with ITT clause 9.0 above.

15.2 All the documents which are to be uploaded/ submitted as soft copies/ scanned documents shall be typed or written in indelible ink and all the pages shall be signed by the authorized signatory of the Tenderer before scanning and uploading. The employer is not responsible for any misplacement or non-uploading of any required documents to qualify in the bidding process.

15.3 The Tenderer shall include in their Tender an index that cross-refers all the Employer's tender requirements elaborated in these documents to all the individual sections within Technical Bid and Price Bid which the Tenderer intends to be the responses to every one of those requirements. The Tender submittals i.e. Technical Bid and Price Bid must be presented, all pages numbered, and laid out in a logical sequence with main and subheadings to facilitate evaluation.

15.4 The server time on KPP Portal (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of Bids by the bidders, opening of Bids, etc. The bidders should follow this time schedule during bid submission.

15.5 The Employer may, at his discretion, extend the date for the submission of the Tender by amending the Tender Documents in which case all rights and obligations of the Employer and the Tenderer previously subject to the original date shall thereafter be subject to the new deadline as extended.

15.6 Upon the successful and timely submission of Bid, the KPP Portal will show/ display a successful Bid submission message with the bid number and the date & time of submission of the bid.

15.7 The Tenderer may generate pdf of Bid submission summary details before/ during signing & submitting the Tender for own records.

15.8 The Tenderer shall note that, 'No Physical Tender will be accepted'

16.0 FAILURE TO SUBMIT TENDERS IN TIME:

Submission/ receipt of tenders shall be closed on the KPP Portal at the last date & time of submission prescribed in NIT or as mentioned in subsequent addendum/corrigendum after which no tender shall be accepted by the KPP Portal.

BMRCL will not be responsible for any delay, internet connection failure, or any error in uploading the tender. The tenderers are advised to upload their Bid submissions well before the due date and time of tender submission to avoid any problems and last-minute rush.

17.0 MODIFICATION AND WITHDRAWAL OF TENDERS

17.1 Except where expressly permitted by these Instructions, the Tenderer shall not make or cause any alteration, erasure, or obliteration to the text of the documents prepared by the Employer and submitted by the Tenderer with or as part of the Tender**.**

17.2 No modifications or withdrawal of tender shall be permitted after the deadline for submission of the Tender. Withdrawal of the Tender after the deadline for submission of Tenders but before the period of Tender Validity shall result in Employer's action as per ITT Clause 13.6.

17.3 The Tender submitted online on KPP Portal will be taken as the final bid.

E TENDER OPENING AND EVALUATION

18.0 TENDER OPENING

18.1 The tenders shall be opened online in the **KPP Portal** by the Employer on the scheduled date and time of tender opening as mentioned in NIT or as per subsequent amendment if any at the office of the General Manager (Contracts) address mentioned in NIT. (If such scheduled date for opening of Bid is subsequently declared as a Public Holiday by the Employer, the next official working day shall be deemed to be the date of opening of the Bids).

18.2 On opening of the technical bid, the Employer will first check the **TENDER PROCESSING FEES and TENDER SECURITY (EMD)** payment details/ documents on the KPP Portal as submitted/uploaded by the bidder. Further, the Employer will examine the Bidders compliance to the GENERAL CONDITIONS OF ELIGIBILITY and TECHNICAL QUALIFICATION CRITERIA.

18.3 Tender submittals/ documents of all online Tenders received by the Employer on the KPP Portal shall be downloaded for office records and further technical evaluation.

18.4 The Price Bid(s) will be opened on the KPP Portal on a subsequent date after completion of the evaluation of technical bids. Price Bids of only those tenderers whose technical bid submissions are found substantially responsive and technically compliant as per ITT clause 22.1 will be opened. The time of opening of Price Bids shall be informed through the KPP Portal. Bidders shall visit the KPP Portal regularly for updates.

19.0 PROCESS TO BE CONFIDENTIAL

19.1 Except for the public opening of Tender on the KPP Portal, information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations concerning the award of Contract shall not be disclosed to Tenderers or other persons not officially concerned with such process.

19.2 Any effort by a Tenderer to influence the Employer in the process of examination, clarification, evaluation, and comparison of Tenders and decisions concerning the award of contract, may result in the rejection of the Tender.

20.0 CLARIFICATION OF TENDERS

20.1 Evaluation of Technical Bids submitted by Tenderers shall be undertaken based on details submitted in the Tender submittals/ documents only. Employer may at his discretion ask any Tenderer for clarification on his submittals in writing. The Tenderer, in response to the clarification, is not permitted to submit additional information/ document not pertaining to the clarification sought. The request for clarification and the response shall be in writing only and no response leading to material change in the tender submittals will be taken into consideration. It is not mandatory for Employer to seek clarification. Employer reserves the right to evaluate the bids based on documents submitted by the bidders.

20.2 Notwithstanding the provision in Para 20.1 above, the Tenderer must take care that all required documents to establish their Eligibility & Qualification and other mandatory requirements must be submitted before the deadline for submission.

20.3 During the evaluation of Price Bid, the Employer may ask Tenderers individually for clarification regarding their price bids, including the breakup of prices. The request for clarification and the response shall be in writing and no change in the price or substance of the Price bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetical errors discovered by the Employer during the evaluation of Tenders in accordance with Clause 22.2.4.

20.4 If a Bidder does not provide clarification on his bid by the date and time set in the Employer's request for clarification, their bid will evaluated as per the available information in the submitted bid.

21.0 DETERMINATION OF RESPONSIVENESS

21.1 Tender shall be considered responsive if it conforms to all the terms, conditions, and specifications of the Tender documents without any material deviation or reservation which include exceptions, exclusions & qualifications. A material deviation or reservation is one which affects in any substantial way the scope, quality, performance, or administration of the works to be undertaken by the Tenderer under the Contract, or which limits in any substantial way, the Employer's rights or the Tenderer obligations under the Contract as provided for in the Tender documents and/or is of an essential condition, the rectification of which would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders at reasonable price.

21.2 The Employer may waive any nonconformities in the Tender that do not constitute a material deviation, reservation, or omission. The Employer may request the Tenderer to submit the necessary information or documentation, within a reasonable period, to rectify nonmaterial nonconformities in the Tender related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Tender. The request of the Employer for clarification and the response of the bidder shall be in writing only. Failure of the Tenderer to comply with the request may result in the rejection of his Tender.

21.3 If a Tender is not substantially responsive to the requirements as stipulated in Tender documents, it will be rejected by the Employer, and subsequently will not be permitted to be made responsive by the Tenderer by correction or withdrawal of the non-conformity or infirmity. The Price Bid of such Tenderer shall not be opened on the KPP Portal.

21.4 The decision of the Employer as to which of the Tenders are not substantially responsive shall be final.

22.0 EVALUATION OF TENDER

22.1 **Evaluation of Technical Bids**

22.1.1 The Employer will carry out the technical evaluation of Tender submittals/ documents of all online bids received by the Employer on the KPP Portal to determine that the Tenderer has a full comprehension of the work of the contract. Where a Tenderer's Technical submittal is found to contain any material deviation or reservation with the requirement of work, the tender may be rejected.

22.1.2 Evaluation of Technical Bid involves verification of payment of requisite Tender processing Fees in accordance with ITT Clause 3.2.

22.1.3 Evaluation of Technical Bid involves verification of payment of requisite Tender Security for its adequacies in accordance with ITT Clause 13.

22.1.4 Further the technical bids will be checked and examined for General Conditions of Eligibility and Eligibility cum Qualification Criteria (EQC) requirements. If a Tenderer fails to comply with General Conditions of Eligibility as set out in Tender Documents and made available in the KPP Portal, then detailed evaluation of Eligibility cum Qualification Criteria (EQC) of the tenderer will not be carried out and Price Bids (BoQs) of those non-responsive Tenderers will not be opened.

22.1.5 A tenderer will be qualified for opening of his price bid (BoQ) only if his technical bid meets the requirements of EQC and found to be substantially responsive to the requirements stipulated in the Tender Document. The date and time of opening of price bids (BoQs) shall be updated/ notified online on the KPP Portal for information of all substantially responsive and technically qualified Tenderers.

22.1.6 The tenders which have been determined as being not qualified in the evaluation of technical bids and have been rejected on the grounds of being substantially non-responsive to the requirements of the Tender document, the price bid(s) of such Tenderer(s) shall not be opened on KPP Portal.

22.1.7 Tender Securities of nonresponsive bidders (whose price bids shall not be opened) shall be returned after finalization of technical evaluation and updating of technical bid evaluation results on the KPP Portal.

22.2 **Evaluation of Price Bids (BoQs)**

22.2.1 The Employer shall open the Price Bids (BoQs) of all Technically qualified and substantially responsive Tenderers online on the KPP Portal on the stipulated date and time of opening notified under ITT Clause 22.1.5 above. The Price bids (BoQs) i.e. financial offer/ quotes of all such Tenderers will be downloaded by the Employer from the KPP Portal for office records and further financial evaluation.

22.2.2 Offers, deviations and other factors that are over and above the requirements of the Tender documents or will otherwise result in the accrual of unsolicited benefits to the Employer will not consider in the tender evaluation.

22.2.3 Evaluation of the Price Bid (BoQ) will be based on overall financial offer/ quote in the Price Bid (BoQ) i.e. Summary of cost of all sub-estimates/ schedules / Items of BoQ (as applicable) as a whole after applying the tender premium in percentage rate (at par/ Excess / Less on estimated total amount) quoted by the bidder in BoQ (Price Bid). Any alteration in Price Bid (BoQ) thereafter will not be given any cognizance. However, the grand total amount quoted by Tenderer must found to be reasonable and acceptable.

22.2.4 The evaluation of Price Bids (BoQ) by the employer will take into account, in addition to the tenderers quoted prices, the following factors.

(a) Arithmetical errors if any found and corrected by the Employer.

(b) Such other factors of an administrative nature as the Employer may consider having a potentially significant impact on contract execution, price and payments, including the effect of items or unit rates that are unbalanced or unrealistically priced.

22.2.5 The effect of the price adjustment provisions if any prescribed in the General Conditions of Contract & Contract Data, to be applied during the period of execution of the Contract, shall not be taken in to account for the purpose of bid evaluation.

22.2.6 Conditional quotes for any or all sub-estimates/ schedules/ Items of Price Bid (BoQ) may lead to rejection of the Tender.

22.2.7 In case of more than one L1 bidder, the tender may be awarded to a tenderer having a higher Bid Capacity. In case the Bid capacity is also the same, the tenderer having done more value of similar work in the last three financial years, may be selected for the award.

22.3 **UNBALANCED/ FRONTLOADED/ ABNORMALLY LOW BID:** If the lowest evaluated Price Bid (BoQ) is seriously unbalanced, front-loaded, or abnormally low in the opinion of the Employer, the Employer may require the Tenderer to produce a detailed price break up analysis for any or all sub-estimates/ schedules/ Items of Price Bid (BoQ) to demonstrate the internal consistency of those prices with the work execution methods proposed. If after evaluating the price break up analysis, the Employer determines that the tenderer has substantially failed to demonstrate its capability to deliver the contract at the offered price, the employer may reject the Tender.

In case of abnormally low bids, the Employer may require “Additional ‘Performance Security” over and above the ‘Performance Security’ outlined in ITT Clause 27.1 and which may be obtained at the expense of the successful Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful Tenderer under the contract. If such an additional Performance Security is required by the Employer, the successful Tenderer shall furnish the same failing which his Tender shall be liable to rejected.

“Additional Performance Security” will be calculated as under:

(i) If the Bid Price offered by the Bidder is lower by more than 10% but up to 20% of the estimated total amount, then the additional Performance Security shall be calculated @ 10% of the difference in the (a) Estimated total amount (as mentioned in NIT) – 10% of the estimated total amount and (b) the Bid Price offered by the Bidder.

(ii) If the Bid Price offered by the Bidder is lower by more than 20% of the estimated total amount, then the additional Performance Security shall be calculated @ 15% of the difference in the (a) Estimated total amount (as mentioned in NIT) – 10% of the estimated total amount and (b) the Bid Price offered by the Bidder.

F. AWARD OF CONTRACT

23.0 AWARD CRITERIA

23.1 Subject to the provisions of ITT Clause 24.0, the Employer shall award the Contract to the Tenderer whose Bid has been determined to be substantially responsive and to constitute the lowest evaluated Bid, in accordance with ITT clause 22.0

24.0 EMPLOYER'S RIGHT TO ACCEPT ANY TENDER AND TO REJECT ANY OR ALL TENDERS

24.1 Notwithstanding the provision in ITT Clause 23.0, the Employer reserves the right to accept or reject any Tender(s) and to annul the Tender process and reject all Tenders, at any time before the award of contract without thereby incurring any liability to the affected Tenderer or Tenderers or any obligations to inform the affected Tenderer or Tenderers of the grounds for Employer's action.

25.0 NOTIFICATION OF AWARD

25.1 Before the Tender validity period expires, the Employer will notify the successful Tenderer of their accepted Tender. This formal notification, referred in the Contract as the 'Letter of Acceptance', will state the "Contract Price"- the total sum to be paid to the Tenderer for the execution, completion, maintenance and guarantee of the works as prescribed by the Contract.

25.2 Until a formal contract is prepared and executed, the notification of a 'Letter of Acceptance' shall constitute a binding Contract**.**

25.3 Tender Securities of the unsuccessful bidders (whose price bids are opened) will be returned to them immediately after issue of a 'Letter of Acceptance' to the successful bidder.

26.0 SIGNING OF CONTRACT AGREEMENT

26.1 The Employer shall prepare the Contract Agreement in the format as prescribed in Contract Forms (Form-1), with such modifications as may be necessary for duly incorporating all the terms of the agreement between the two parties. The successful Tenderer will be required to execute the Contract agreement within the period stated in the Contract Data of General Conditions of Contract. One copy of the Contract Agreement duly signed by the Employer and the successful Tenderer through their authorized signatories will be supplied by the Employer to the successful Tenderer.

27.0 PERFORMANCE SECURITY

27.1 The successful Tenderer shall furnish to the Employer a Performance Security and Additional Performance Security (if applicable) under sub-clause 4.2.1 of the General Conditions of Contract within the time period stated in the Contract Data of General Conditions of Contract.

27.2 The Successful tenderer shall furnish either a Bank Guarantee (in Physical form or e-BG) or an Insurance Surety Bond towards Performance Security, in the prescribed format provided under Contract Forms (Form-2/2A). The beneficiary details given in ITT Clause 13 shall be considered for issue of Bank Guarantee or Insurance Surety Bond.

28.0 ANNULMENT OF THE AWARD

Failure of the successful Tenderer to comply with the requirements of ITT clauses 25.0, 26.0 and 27.0 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender security.

29.0 COMPLETION PERIOD

The total completion period of work along with Key dates to be achieved at different stages of progress of work and details of Key personnel and Equipment to be deployed for the timely completion of work is mentioned in the Employers Requirements (scope of work) and Contract Data of General Conditions of Contract.

30.0 APPEAL

30.1 Under section 16 of the KTPP act, the aggrieved Bidder may appeal, within the specified period, to the Appellate Authority- **Managing Director / BMRCL**.

30.2 Any suit or application, arising out of any dispute or differences on account of this Tender after the first step of Bidder's appeal to the Appellate Authority is exhausted shall be filed in a competent court of Law at Bangalore, Karnataka only and no other court or any other district of the country shall have any Jurisdiction in the matter.

31.0 CONTACT PERSON IN THE BMRCL OFFICE

The contact person in the BMRCL office, regarding this Tender will be **General Manager (Contracts)**, Bangalore Metro Rail Corporation Limited, Annex-1, Project & Planning, 4th Floor, BMTC Complex, KH Road, Shantinagar, Bangalore-560027, Karnataka, India, Telephone No. 080-22969300 and Fax No: 080-22969222, **Email: contracts@bmrc.co.in.**

SECTION-C: ELIGIBILITY CUM QUALIFICATION CRITERIA (EQC)

Clause No.	Description
1.0	General Information
2.0	Eligible Tenderers
3.0	Qualification Criteria

SECTION-C: ELIGIBILITY CUM QUALIFICATION CRITERIA (EQC)

1.0 GENERAL INFORMATION

1.1 The Tenderers should demonstrate their capabilities, by providing data based on their experience, past performance, their personnel, equipment and financial resources. Client certificates are mandatory for the work done.

1.2 Information supplied by the Tenderer must apply to the Tenderer named in the application/tender and not, unless specifically requested, to other associated companies or firms. Sub-contractors experience and resources shall not be taken into account in determining the Tenderer's compliance with the Eligibility cum Qualifying Criteria (EQC).

1.3 Tenderers are not required to submit on their own, additional information or material subsequent to the date of submission and such material if submitted will be disregarded.

1.4 Tenders will be evaluated as per the Eligibility cum Qualification criteria & other requirements stipulated in the Tender document. The Tender is liable to be rejected, if the credentials and information required are not submitted in entirety as per the Tender document.

1.5 Tenderers will be deemed to have understood and agreed that no explanation or justification on any aspect of the Qualification process will be given and that BMRCL qualification decisions are without any right of appeal whatsoever. Tenderers are advised that neither BMRCL nor its successors, assignees/ Consultants will respond to enquiries or enter into communications concerning or relating to the tender award process.

2.0 ELIGIBLE TENDERERS

2.1 Tenderer may be a Proprietorship Firm/ Partnership Firm/Private Limited Company/ Public Limited Company. Tenderer shall submit the tender as a **Single Entity** only. **Joint venture/ Consortium is not permitted in this tender**.

2.2 Class-I Local Supplier - **Deleted**.

2.3 **Restrictions in procurement, from a Bidder of a country which shares land border with India**: Tenderers participating from Any Bidder from a country which shares a land border with India will be eligible to bid in this Bid **only if the Bidder is registered with the Competent Authority**. *Further, any bidder (including from India) having specified Transfer of Technology (ToT) arrangement with an entity from a country which share a land border with India, shall also require to be registered with the same competent authority* constituted by Department for Promotion of Industry and Internal Trade (DPIIT), Government of India or the Competent Authority constituted by Government of Karnataka.

(i) "Bidder" (including the term 'Bidder', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of Bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

(ii) "Bidder from a country which shares a land border with India" means: -

a. An entity incorporated, established or registered in such a country; or

b. A subsidiary of an entity incorporated, established or registered in such a country; or

c. An entity substantially controlled through entities incorporated, established or registered in such a country; or

d. An entity whose beneficial owner is situated in such a country; or

e. An Indian (or other) agent of such an entity; or

f. A natural person who is a citizen of such a country; or

g. A consortium or Joint venture where any member of the consortium or joint venture falls under any of the above.

(iii) The beneficial owner for the purpose of (ii) above will be as under:

a. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

- "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;
- "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

b. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

c. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

d. Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

e. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

f. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

(iv) Successful Bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "Contractor from a country which shares a land border with India" shall be as in para 2.3(ii) above.

(v) The registration shall be valid at the time of submission of bids and at the time of acceptance of bid.

(vi) If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be relevant consideration during contract execution.

2.4 Tenderer is required to submit undertaking in prescribed formats for compliance to the above EQC Clause 2.3 (**Attachment-2, Attachment-2A & 2B to Form of Tender**).

2.5 The above EQC Clause 2.3 will not apply to Bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs.

2.6 **Conflict of interest**: Tenderers shall not have a conflict of interest that affects the Bidding Process. Any Tenderer found to have a Conflict of Interest shall be disqualified. A Tenderer will be deemed to have Conflict of interest with one or more parties in this Tendering process, if:

(a) A tenderer submits more than one bid for a work will result in disqualification of all its bids for that work.

(b) The Tenderer has been engaged by the Employer to provide consulting services for the preparation related to procurement for or implementation of this work.

(c) Any association/affiliation (inclusive of parent firms) of the Bidder has been engaged by the Employer to provide consulting services for the preparation related to procurement for or implementation of this work

(d) The Tenderer lends, or temporarily seconds its personnel to Firms or organizations which are engaged in Consulting services for the preparation related to procurement for or implementation of this work.

2.7 **GROUNDS FOR EXCLUSION**: As on date of submission of Bid, the Bidder should not be excluded as per the **GROUNDS FOR EXCLUSION**. The Bidder should submit an undertaking to this effect (**Attachment-1 to Form of Tender**). GROUNDS FOR EXCLUSION will constitute the following, if the Bidders;

(a) are bankrupt, being wound up or ceasing their activities, are having their activities administered by the courts, have entered into receivership, or are in any analogous situation arising from any similar procedure; or
is under insolvency proceedings at the time of bid submission and until the contract is awarded or adjudged insolvent by the National Company Law Tribunal (NCLT), with any resolution proceedings pending before the NCLT;

(b) have been convicted within the past five years by a court decision, which has the force of residential jurisdiction in the country where the project is implemented, of fraud or corruption or any other offence committed during the procurement or performance of a contract, unless they provide supporting information together with their Statement of Integrity which shows that this conviction is not relevant in the context of this project;

(c) have committed serious professional misconduct within the past five years during the Procurement or performance of a contract, as evidenced by any means by the Employer;

(d) have not fulfilled their obligations regarding the payment of social security contributions or taxes in accordance with the legal provisions of the country where they are established or the Employer ‘s country;

(e) have indulged in ‘Corrupt Practice’; “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution;

(f) have indulged in 'Fraudulent Practice'; "fraudulent practice" means a misrepresentation of facts in order to influence an evaluation process or the execution of a contract, and includes misleading or false representation in forms or statements or attachment submitted and collusive practices among Bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the Employer of the benefits of free and open competitions;

(g) have been considered ineligible due to execution of Bid–Securing Declaration by any Central Govt./State Govt./PSUs;

(h) have been Black listed/debarred /banned business by any Central Govt./State Govt./PSUs or Local Authority or World Bank or ADB or JICA or any other International Financing Institution, or any entity controlled by them;

(i) have left/abandoned the awarded works on his own in the last 05 years;

(j) "have been rescinded / terminated by any Central Govt. or State Govt. or PSUs or Government entity after award, during last 5 years";

(k) have been either penalized with liquidated damages of 5% (or more) of the contract value due to delay or imposed with penalty of 5% (or more) of the contract value due to any other reason in any Contract awarded by BMRCL/ any other Metro Organization (100% owned by Govt.), during last three years (as on last day of the month preceding the month of submission of this tender);

Bidders may also note that in case the Bidder is excluded as per Ground for Exclusion mentioned above, after the due date of submission of Bid but before award of the contract by BMRCL, they shall inform the same to BMRCL in writing within 5 working days, failing which it will be considered that the Bidder has will fully concealed the information and the Bidder shall be solely responsible for all implications that may arise in accordance with the conditions of this Bid

2.8 **KEY PERSONNEL and EQUIPMENT**: The minimum requirement of KEY PERSONNEL and EQUIPMENT for execution of the work under this tender is specified in Employers Requirements (scope of work). The tenderer shall submit an undertaking in this regard that if his Tender is accepted he shall deploy the required KEY PERSONNEL and EQUIPMENT as stipulated in the Employer's Requirements (scope of work). (**Attachment-1 to Form of Tender).**

3.0 QUALIFICATION CRITERIA: Pursuant to Clause 2.0 above, Eligible Tenderers are required to meet the Qualification Criteria as stipulated below in order to qualify for award of this contract.

3.1 Work Experience Criteria:

The tenderer should have substantially****** completed, as prime contractor, **at least one similar work* of value not less ₹50.41 Lakhs** during last 05 (Five) financial years (2021-22 to 2025-26).

Notes:

(i) *Similar work for this contract shall be "**Horticulture and Landscaping Works**".

(ii) In respect of similar work, work done/ completion certificate issued by the Client shall be furnished by the tenderer in support of work experience criteria as per format (**Attachment-4 & Attachment-5**). The certificate shall indicate the nature, scope of work, awarded cost (Excl. GST), actual completion cost (Excl. GST) and actual date of completion etc.

In cases where the Client's Completion Certificate indicates values inclusive of GST and/or other applicable taxes, the Tenderer shall submit the actual completion cost after deducting the applicable GST dully certified by Chartered Accountant. For portions of Similar Nature Works executed in the pre-GST period, the Tenderer shall make a deduction towards taxes at the rate of 12% to arrive at the completion cost exclusive of taxes.

(iii) ******Similar nature work where Financial value of physically executed work is **90%** or more of the original awarded contract value or revised contract value (if any), duly certified by the client, will be treated as substantially completed Similar nature work and will be considered for qualification of work experience criteria. In case original contract value has been revised, the revised contract value shall be considered for this purpose

(iv) Value of Completed work (s) during previous financial years shall be up dated with a weightage of 5 % per year, compounded annually, for Indian Rupees portion (including foreign currencies, converted to Equivalent INR), to bring them to the current price level of the financial year in which the tenders are invited.

Value of completed/ substantially completed Similar Nature Work in foreign currency shall be converted to Equivalent INR by adopting Exchange rate between the foreign currency and INR as prevailing on the date of completion / date given in the substantial completion certificate as applicable, as per the website of Reserve Bank of India (RBI).

The value of the ongoing works which are substantially completed Work(s) shall not be updated to the price level of the Financial year in which the tender is invited.

(v) In case the "similar work" (s) is executed for private client, Contract agreement, Bill wise details of payment received and Proof of TDS (Form 26AS) deducted by clients for all payments received shall be submitted duly certified by CA.

(vi) In case the qualifying work(s) executed as a member of JV/Consortium, the qualifying work value shall be considered as per the percentage participation of the member in that JV/Consortium. A copy of JV agreement shall also be submitted by the bidder.

(vii) Work experience certificates of the tenderers with qualification as a sub-contractor of main contractor shall not be considered.

(viii) Prime Contractor means a firm directly appointed by the client (Employer) as the main contractor, responsible for the execution and overall management of the contract either through tendering or by assignment/ nomination/entrustment.

3.2. Financial Qualification Criteria:

(a) **Annual Turnover**: The tenderer should have achieved in at least **two financial years** a minimum annual financial turnover of **₹141.99 Lakhs** during the **last five financial years** (2020-21 to 2024-2025).

(b) **Liquidity**: The tenderer shall demonstrate that he has access to, or possess liquid assets and /or availability of credit facilities of not less than **₹17.79 Lakhs** (Credit lines/ letter of credit/ certificates from banks for meeting the fund requirements etc.

Notes:

(i) Banker's Certificate for liquidity is required to be submitted. (**Attachment- 10**).

(ii) Annual financial statements (Audited Balance sheets including all related notes and income statements) for last five financial years (2020-21 to 2024-25) shall be submitted by the Tenderer (**Attachment-7**). The financial information of the Tenderer must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number.

In case any discrepancy in data is found between the Audited Balance sheet and the financial information submitted, the data as available/found in the Audited Balance sheet will only be considered.

In case audited Balance sheet of the last financial year ending with **2024-25** is not made available by the Bidder, he has to submit an affidavit certifying that 'The Balance Sheet has actually not been audited so far'. In such a case the financial data of previous '4' audited financial years will be taken into consideration for evaluation. If audited Balance sheet of any year other than the last financial year ending with **2024-25** is not submitted even when requested for as a clarification under clause 20 of ITT, then the Tender will be considered as non-responsive.

All documents shall reflect the stand-alone financial status of the Tenderer and not the Tenderer's parent companies, subsidiaries, or affiliates.

(iii) In case the financial data is in a currency other than Indian Rupees, the same shall be converted into equivalent Indian Rupees by adopting Exchange rate between the foreign currency and INR as prevailing on the last day of the respective financial year, as published on the website of Reserve Bank of India (RBI) for the purpose of Bid Evaluation.

In case a financial/ calendar year was shown as January-December 2020 in the annual financial statements of foreigners, it will be considered as FY 2020-21 and like that Jan-Dec 2021 as FY 2021-22 and so on for the purpose of Bid Evaluation.

(iv) Financial turnover of previous financial years shall be given a weightage of 5% per year (compounded annually), to bring them to the current price level of the Financial Year in which the tender is invited.

(v) All the documents or certifications, which are provided by Chartered Accountant (CA) after 1st July, 2019, must contain UDIN thereon and the particulars of certifications must be same as mentioned on document/certification and submitted to ICAI on its website which can be verified online on https://udin.icai.org/search-udin.

3.3. Bid Capacity Criteria:

The tenderer who meet the above specified minimum qualifying criteria, will only be qualified, if their available Bid capacity is more than the total tender value i.e **₹100.81 Lakhs**. The available Bid capacity will be calculated as under:

Available Bid Capacity =or> (1.5 x A x N) – B

Where,

A = Maximum value of works/supplies done (i.e. annual financial turnover) in any one year during the last five financial years (**2020-21 to 2024-25**) (Financial turnover of previous financial years shall be given a weightage of 5% per year (compounded annually) to bring them to the current price level of the Financial Year in which the tender is invited). (**Attachment- 7)**

N = Number of years prescribed for completion of this tender work as mentioned in NIT.

B = Total Value of Balance Works in hand i.e. existing commitments & ongoing works /supplies during the completion period of work under this tender as mentioned in NIT, from the last day of the month preceding the month of invitation of this tender (**Attachment- 7)**

Notes:

(i) works/supplies in hand (i.e. ongoing works/supplies) information provided in '**Attachment-6'** must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number.

(ii) Calculation of Available Bid Capacity (**Attachment- 6A)** to be submitted duly certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number.

(iii) All the documents or certifications, which are provided by CA after 1st July, 2019, must contain UDIN thereon and the particulars of certifications must be same as mentioned on document/certification and submitted to ICAI on its website which can be verified online on https://udin.icai.org/search-udin.

SECTION-D: FORM OF TENDER (INCLUDING ALL ATTACHMENTS)

Sl. No.	**Requirement** (To be submitted by each tenderer)
1	Form of Tender
2	Proforma Letter of Declaration and Undertaking **(Attachment -1)**
3	Proforma letter of Declaration regarding Eligibility in respect of clause 2.3 of EQC in case of land border sharing country **(Attachment -2)**
4	Undertaking regarding Eligibility in respect of clause 2.3 of EQC in case of Sub-Contracting **(Attachment -2A)**
5	Undertaking regarding eligibility in respect of clause 2.3 of EQC in case of Transfer of Technology (ToT) **(Attachment -2B)**
6	Tenderer's Information **(Attachment -3)**
7	Similar Work Experience **(Attachment -4)**
8	Summary of Information provided in Attachment - 4 **(Attachment -5)**
9	Balance works in hand **(Attachment -6)**
10	Available Bid Capacity **(Attachment -6A)**
11	Financial Information **(Attachment -7)**
12	Format for Power of Attorney for Bidding For Single Entity/Sole Bidder only) **(Attachment -8)**
13	Form of Bank Guarantee for Tender Security **(Attachment -9)**
14	Form of Insurance Surety Bond for Tender Security **(Attachment -9A)**
15	Form of Bankers Certificate for Liquidity **(Attachment -10)**
16	Tenderers brief of technical details **(Attachment -11)**

FORM OF TENDER

(To be submitted on Tenderer's Letter head)

Ref: (Tenderer to provide date and reference No.) Dated…….

The Executive Director (Civil),
Bangalore Metro Rail Corporation Ltd.
Third floor, BMTC Complex
KH Road, Shanthinagar, Bangalore-560027.

Dear Sir,

Tender for: ……(Name of Work)

Tender No.: …….

We, M/s ---------- hereby apply as a tenderer and offer to execute the works described above in accordance with the tender provisions for the total sum quoted by us in the Price Bid (BoQ). In support of the tender we submit herewith untampered documents as required. We are aware that we will be considered only if we are found to fulfil the eligibility criteria as stipulated in Tender document.

We do hereby solemnly affirm and state the following:

1. We understand that in the event of any information furnished by us being found later on to be incorrect or any material information having been suppressed, the following action can be taken in addition to the provisions in the Tender document.
   (a) Our name will be removed from the panel of qualified agencies.
   (b) Any tender submitted by us on the basis of qualification may not be considered.
   (c) If any tender from us is accepted and a contract awarded to us on the basis of our qualification, the tender acceptance may be withdrawn and the contract awarded to us may be cancelled without any financial claim request from our side.

2. We declare that the submission of this Tender confirms that no agent, middleman or any intermediary has been, or will be engaged to provide any services, or any other item of work related to the award and performance of this Contract. We further confirm and declare that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the tender price does not include any such amount. We acknowledge the right of the Employer, if he finds to the contrary, to declare our Tender to be non-compliant and if the Contract has been awarded to declare the Contract null and void.

3. Our Tender shall be valid for a period as described in ITT clause 12 and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

4. Tender Security (EMD) as per tender requirements is attached with this tender.

5. Power of Attorney to sign and submit this letter is attached with this tender.

6. We understand that you are not bound to accept the lowest evaluated Tender or any other Tender that you may receive.

7. We acknowledge that all the Attachments to '**FORM OF TENDER'** are integral part of the Tender.

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

ATTACHMENT-1

PROFORMA LETTER OF DECLARATION AND UNDERTAKING

(To be submitted on Tenderer's Letter head)

Ref: Dated…….

The Executive Director (Civil),
Bangalore Metro Rail Corporation Ltd.
Third floor, BMTC Complex
KH Road, Shanthinagar, Bangalore-560027.

Dear Sir,

Declaration and Undertaking for "(name of work) ----------

Tender No.: ----------

We M/s ---------- for the purpose of the Tender for the above said work, do hereby solemnly affirm and state the following as Declaration and Undertaking:

1. Having inspected the site, examined the Tender documents including Employer's requirements, General Conditions of Contract & Contract Data, Special Conditions of Contract, Technical Specifications, Tender Drawings, Price Bid (BoQ), Eligibility Cum Qualification Criteria, Instructions to Tenderers, Form of Tender (including all attachments) and Addenda/Corrigendum etc., thereto (if any) for the execution of above mentioned works/services, and prepared the tender entirely in accordance with all the requirements of the tender document and agree entirely with them.

2. We here by confirm that we have visited the sites of work and have become conversant with the local conditions of working.

3. For the purpose of your evaluation, study, review and decision making, we are ready to let you inspect our business premises / site, etc.

4. We authorize BMRCL or any of their authorized representative to approach, enquire, verify and check the matter furnished in our submission with the concerned client / owner of the Project / Contract and the concerned Banker of reference provided by us.

5. We undertake to hold in confidence all documents and information whether Technical or commercial supplied to us at any time by or on behalf of BMRCL in connection with this Tender without your written authority or as otherwise required by law not to publish or otherwise disclose the same.

6. If our Tender is accepted we commit to deploy the required Key Personnel fulfilling the Qualification and Experience requirements stipulated in Employer's Requirements as per EQC Clause 2.8.

7. If our Tender is accepted, we commit to deploy the required Equipment consistent with the requirements stipulated in Employer's Requirements as per EQC Clause 2.8.

8. If our Tender is accepted, we commit to submit work method statements for all major activities and get these approved from the Engineer prior to commencing work on such activities. We also understand that the work shall be executed as per the approved method statements and Key Dates without any deviations and delay in completion.

9. If our Tender is accepted, we agree to establish our project office in Bangalore.

10. If our Tender is accepted, we commit to submit a Performance Security and Addl. Performance Security in accordance with the Tender Documents.

11. We declare that we do not have conflict of interest as described in EQC Clause 2.6.

12. We declare that, we have not been excluded as per the GROUNDS for EXCLUSION mentioned in EQC Clause 2.7 as on date of submission.

13. We understand that this Tender shall be governed by and construed in all respects according to the laws for the time being force in India. The courts at Bangalore will have exclusive Jurisdiction in the matter.

14. We confirm and declare that by virtue of our signature below, to the best of knowledge and belief that the information provided by us as required in this Tender Document, all supporting and explanatory information is truthful and exact.

15. In case our Tender is accepted, we will enter in to agreement as per ITT Clause 26 by signing all the contract documents mentioned in Contract Form-1.

16. We declare that we comply with EQC Clause 2.3. At any stage if our declaration is found to be false, Employer shall take action in accordance with Clause 4.33 of General Conditions of Contract along with such other legal action as may be permissible under law.

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

ATTACHMENT-2

PROFORMA LETTER OF DECLARATION
REGARDING ELIGIBILITY IN RESPECT OF CLAUSE 2.3 OF EQC
(Restrictions in procurement, from a Bidder of a country which shares land border with India)

(To be submitted on Tenderer's Letter head)

Ref: Dated…….

The Executive Director (Civil),
Bangalore Metro Rail Corporation Ltd.
Third floor, BMTC Complex
KH Road, Shanthinagar, Bangalore-560027.

Dear Sir,

Sub: Declaration Regarding Eligibility in Respect of Clause 2.3 of EQC for the work ---------- (Name of the work)
Tender No.: ----------

We, ... (Name of Tenderer), for the purpose of Technical evaluation for the performance of above said contract hereby declare that we have read the Clause 2.3 of EQC regarding restrictions on procurement from a Bidder of a country which shares land borders with India.

(i) The Clause 2.3 of EQC is applicable to us and required supporting documents is enclosed.

OR

(ii) The Clause 2.3 of EQC is not applicable to us.

In case of any false declarations made by us for the purpose of qualifying, we shall be disqualified and our bid shall be rejected and suitable action will be initiated in accordance with Clause 4.33 of General Conditions of Contract along with such other legal action as may be permissible under law.

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Note: Delete or strike out that is not applicable in respect of para (i) or (ii) given above

ATTACHMENT-2A

UNDERTAKING REGARDING ELIGIBILITY IN RESPECT OF CLAUSE 2.3 OF EQC (IN CASE OF SUB-CONTRACTING).

(To be submitted on Tenderer's Letter head)

Ref: Dated…….

We, M/s ----------have read the EQC Clause 2.3 regarding restrictions on procurement from a Bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries;

We, M/s ---------- declare that, in case we are awarded the contract, we will not subcontract any work under this contract to a contractor from such countries unless the contractor is registered with the competent authority and submits a valid registration certificate

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

ATTACHMENT-2B

UNDERTAKING REGARDING ELIGIBILITY IN RESPECT OF CLAUSE 2.3 OF EQC (IN CASE OF TRANSFER OF TECHNOLOGY (ToT).

(To be submitted on Tenderer's Letter head)

Ref: Dated…….

We, M/s ---------- have read the EQC Clause 2.3 regarding restrictions on procurement from a Bidder having Transfer of Technology arrangement (ToT). I certify that we do not have any ToT arrangement requiring registration with competent authority.

OR

We, M/s ---------- have read the EQC Clause 2.3 regarding restrictions on procurement from a Bidder having Transfer of Technology arrangement (ToT). I certify that we have valid registration to participate in this procurement (copy attached).

Yours faithfully,
(Signature) …….
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Note: Delete or strikeout whichever is not applicable to bidder

ATTACHMENT -3

TENDERER'S INFORMATION

1	**Name of the Work:** Tender No: ----------
2	Tenderer's Information : (a) Tenderer's Legal name: (b) Tenderer's Legal address: (c) Date of Incorporation: (d) Type of Business: (e) Tenderer's authorized representative: (Name, address, telephone numbers & e-mail address)
3	Tenderer's Bank Details: (a) Name of Bank (b) Branch name (c) Beneficiary name (d) Type of Account (e) Account Number (f) IFSC code (g) Bank's Contact Number and Email
4	Tenderer's other details: (a) GST Registration No. (b) PAN No.

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Notes:

1. Copy of Memorandum/ Articles of Association and Certificate of Incorporation or Partnership Deed or constitution of the legal entity is to be submitted by the Tenderer. Affidavit is to be submitted in case of individual/ Proprietorship tenderers.
2. Copy of GST registration certificate is to be submitted by the Tenderer
3. Copy of PAN is to be submitted by the Tenderer
4. Copy of cancelled cheque showing the Bank Account details to be submitted by the Tenderer

ATTACHMENT -4

SIMILAR WORK EXPERIENCE

(Separate form should be attached for each work)

(To be submitted by Tenderer*)

Name of Tenderer**: ……**

Project Title:	Location:
Scope: (Give salient features of the work)	Client's Address:
Client's Representative:	Tel.:
Was the work carried out as a) Prime Contractor In case of Prime contractor, whether work carried out as a Single Entity OR Member of a JV/consortium. If Member of a JV/consortium, indicate percentage participation in that work.	
Date of commencement of work:	Date of completion of work: Was the date of completion given in the original contract extended? If so, how much and why?
1. Contract Value (Excl. GST) (at the time of award) …… 2. Value of completed/substantially completed contract (Excl. GST) as on last day of the month preceding the month of invitation of this tender……. 3. Updated Value of completed contract (using inflation factors given in Attachment-6) ……	
Project description: (Clearly indicate the part of the work assigned to the Tenderer (s))	

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Notes:

1. Separate form should be used for each work.
2. Work done certificates issued by the Client for similar nature of work to be attached

ATTACHMENT -5

(To be submitted by tenderer)

Summary of Information provided in ATTACHMENT -5

Sl. No	Name of The Work	Name of the Employer /client	Work executed as a Prime Contractor (single entity or Member of a JV)	Percentage of Participation in Case of JV/ consortium for that particular work	Date of commencement of work	Original Date of completion of work	Final date of completion of work	Contract Value (Excl. GST) (at the time of award)	Completed contract value (Excl. GST) in INR	Updated Value of completed contract in Equivalent INR	Value of Substantially completed contract in Equivalent INR **(not to be updated)**
1	2	3	4	5	6	7	8	9	10	11	12

Yours faithfully,
(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Notes:

1. In case the similar work is executed by the Joint venture, the value of similar work executed shall be considered as per percentage participation by the member(s) in that Joint venture/consortium.

2. Value of completed similar work executed shall be updated to the current price level of the financial year in which the tenders are invited as per Multiplying factor (Indian Currency) given in table below:

Financial year	2020-21	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026
Multiplying factor (Indian Currency)	1.28	1.22	1.16	1.10	1.05	1.00

3. Value of completed/ substantially completed Similar Nature Work in foreign currency shall be converted to Equivalent INR by adopting Exchange rate between the foreign currency and INR as prevailing on the date of completion / date given in the substantial completion certificate as applicable, as per the website of Reserve Bank of India (RBI).

ATTACHMENT -6

Balance works in Hand

(To be submitted duly signed by tenderer & his Chartered Accountant/ Independent Financial Auditor)

Name and description of contract and date of award.	Name of client with telephone number	Contract Value at the time of Award (in INR)	**Value (in INR) of the works remaining balance, which are to be executed during the completion period of work under this tender (as mentioned in NIT), as on the last day of the month preceding the month of invitation of this tender	Anticipated Completion date	*Updated value (in INR) of the balance works
1	2	3	4	5	6

Yours faithfully,

(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

(Signature & Seal) ……
Name of signatory: ……
(Chartered Accountant/ Independent Financial Auditor)
Name and address of CA

Notes:

1. *In column 6 above, for calculation of updated value of the balance works to the current price level of the financial year in which this tender is invited, assume inflation as per multiplying Factors given in the table under note 2 of Attachment-5 above.

2. Tenderer should provide information on their current commitments or all contracts that have been awarded or for which a letter of intent or acceptance has been received or for contracts approaching completion but for which a completion certificate is yet to be issued.

3. **Value of balance works in hand (i.e. existing commitments & ongoing works/supplies) in foreign currency shall be converted to Equivalent INR by adopting Exchange rate between the foreign currency and INR, as prevailing on the the last day of the month preceding the month of invitation of this tender, as per the website of Reserve Bank of India (RBI) for the purpose of evaluation.

4. **Balance works in hand information must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the Companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number**.

5. All the documents or certifications, which are provided by CA after 1st July, 2019, must contain UDIN thereon and the particulars of certifications must be same as mentioned on document/certification and submitted to ICAI on its website which can be verified online on https://udin.icai.org/search-udin.

ATTACHMENT -6A

Available Bid Capacity

(To be submitted duly signed by tenderer & his Chartered Accountant/ Independent Financial Auditor)

Available Bid Capacity = or > (1.5 x A x N) – B

Where,

A = Maximum value of works/supplies done (i.e. annual financial turnover) in any one year during the last five financial years (**2020-21 to 2024-25**) (Financial turnover of previous financial years shall be given a weightage of 5% per year (compounded annually) to bring them to the current price level of the Financial Year in which the tender is invited). (**Attachment-7)**

N = Number of years prescribed for completion of this tender work as mentioned in NIT.

B = Total Value of Balance Works in hand i.e. existing commitments & ongoing works/supplies during the completion period of work under this tender as mentioned in NIT, from the last day of the month preceding the month of invitation of this tender.

Yours faithfully,

(Signature) ……	(Signature & Seal) ……
Name of signatory: ……	Name of signatory: ……
Capacity of signatory: ……	(Chartered Accountant/
Name and address of Tenderer	Independent Financial Auditor)
	Name and address of CA

Notes:

1. Calculation of available Bid Capacity must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the Companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number

2. All the documents or certifications, which are provided by CA after 1st July, 2019, must contain UDIN thereon and the particulars of certifications must be same as mentioned on document/certification and submitted to ICAI on its website which can be verified online on https://udin.icai.org/search-udin.

ATTACHMENT -7

Financial Information

(To be submitted duly signed by tenderer & his Chartered Accountant/ Independent Financial Auditor)

Sl. No	Financial Year	Annual financial Turnover	Multiplying factor	Updated Annual financial Turnover
		INR		**INR**
1	2020-2021		1.28	
2	2021-2022		1.22	
3	2022-2023		1.16	
4	2023-2024		1.10	
5	2024-2025		1.05	

Yours faithfully

(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

(Signature & Seal) ……
Name of signatory: ……
(Chartered Accountant/
Independent Financial Auditor)
Name and address of CA

Notes:

1. Annual financial statements (Audited Balance sheets including all related notes and income statements) for last five financial years (2020-21 to 2024-25) shall be submitted by the Tenderer.

2. The financial information of the Tenderer must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the companies' Act or by a Chartered Accountant with his stamp and signature with membership number and firm registration number.

3. In case any discrepancy in data is found between the Audited Balance sheet and the financial information submitted, the data as available in the Balance sheet will be considered.

4. In case Audited Balance sheet of the last Financial Year ending with 2024-25 is not made available by the Bidder, he has to submit an affidavit certifying that 'The Balance Sheet has actually not been audited so far'. In such a case the financial data of previous '4' audited Financial Years will be taken into consideration for evaluation.

5. In case the company's Financial Year is from Jan 2020 to Dec 2020, then it will be considered under Financial Year 2020-21 and similar procedure will be applicable for other Financial Years also.

6. All documents shall reflect the stand alone financial status of the Tenderer and not the Tenderer's parent companies, subsidiaries, or affiliates.

7. All the documents or certifications, which are provided by CA after 1st July, 2019, must contain UDIN thereon and the particulars of certifications must be same as mentioned on document/certification and submitted to ICAI on its website which can be verified online on https://udin.icai.org/search-udin.

ATTACHMENT -8

FORMAT FOR POWER OF ATTORNEY FOR BIDDING

(To be executed by the Tenderer)
(Ref. ITT Clause 14)

(On Non – Judicial stamp paper of appropriate value in accordance with stamp act if in India or such equivalent document duly attested by notary public)

POWER OF ATTORNEY

Know all men by these presents, we _____(name and address of the registered office of the Tenderer) do hereby constitute, appoint and authorize Mr. / Ms. _____R/o _____(name and address of residence) who is presently employed with us and holding the position of _____as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the submission of the bid for the work ---------- (insert name of the work), (herein after referred as "Project"), including signing and submission of all documents, participating in meeting and providing information / documents / responses to Bangalore Metro Rail Corporation Ltd.(BMRCL), Bangalore, representing us in all matters in connection with our bid for the said Project, and if successful, till the whole of the bid process including Signing of Contract Agreement.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

Accepted	For
(Signature) (Name, Title and Address of the Attorney)	(Signature) (Name, Designation and Address)

Notes:

1. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

2. Also wherever required, the executants(s) should submit for verification the extract of the charter documents and documents such as resolution/ power of attorney in favour of the person executing this power of attorney for the designation of power hereunder on behalf of the tenderer

ATTACHMENT -9

FORM OF BANK GUARANTEE FOR TENDER SECURITY (EMD)

(Refer ITT clause 13)

(To be stamped in accordance with the Stamp Act of the Country of Issuing Bank)

To,
Bangalore Metro Rail Corporation Limited (BMRCL)
3rd Floor BMTC Complex,
K.H. Road, Shanthinagar
Bengaluru- 560027.
Karnataka, INDIA.

1. **WHEREAS** _____ *[Name and Address of the Tenderer]* (hereinafter referred to as the "Bidder" or "Tenderer") has undertaken for submission of Tender in pursuance of Tender Notification No. _____ for _____ *[Name of the Works]* (hereinafter referred to as the "Bid" or "Tender").

2. **AND WHEREAS** it has been stipulated in the Tender issued by Bangalore Metro Rail Corporation Limited (BMRCL) (hereinafter referred to as the "Employer" or "BMRCL") that the Tenderer shall furnish to Employer an unconditional and irrevocable Bank Guarantee from an Indian Scheduled Bank (excluding Cooperative Bank) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with second schedule, for the sum specified herein below as Tender Security(EMD) for compliance of the obligations in accordance with the Tender conditions. In pursuance to this, M/s_____ has requested for issuance of the Bank Guarantee for the sum specified herein below as Tender security.

3. **AND WHEREAS** we _____ *[Name and full address of the Bank including Email address]* having registered office at _____ (hereinafter referred to as the "Bank"), which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors, assignees, do hereby agree to give the Employer such a Bank Guarantee drawn and payable at Bengaluru _____ branch on behalf of the tenderer.

4. **NOW therefore**, the Bank hereby affirm that it is the guarantor and responsible to 'Employer' and their successors, on behalf of the 'Tenderer' up to a total sum of INR/Foreign Currency/ies _____ *[the amount of Guarantee to be specified in figure and words in the respective currency/ies as specified in the Tender document]*. Further, the Bank hereby unconditionally, irrevocably and without demur undertake to immediately pay, the Employer upon the Employer's first written demand and without cavil, or arguments any sum or sums within the limits of the sum specified in this Bank Guarantee as aforesaid without the Employer being required to prove or to show grounds or reasons for the demand, by depositing/crediting to the Current Account of the Employer, the sums specified herein.

5. This Bank Guarantee is encashable at our designated Branch as mentioned below:

   Name of the Bank, Branch and contact details Address Telephone no: & Fax No: E-mail Address Branch Manager/s name & mobile No: Bank Zonal Office Address, Telephone No, Fax Number, E-mail Address: _____

   OR

   This e- Bank Guarantee shall be encashable at the issuing branch of the Bank through NeSL portal.

6. The Bank hereby confirms that the Bank is on the SFMS (Structural Finance Messaging System) platform and shall invariably send an advice of the Bank Guarantee to the designated Bank of the Employer as given below:

Sl. No.	Particulars	Details
i	Name of Beneficiary	Bangalore Metro Rail Corporation Limited
ii	Name of Bank	Bank of India
iii	Branch	Cantonment Branch, Bengaluru.
iv	Address of Branch	49, Jyothi Mahal, St. Mark's Road, Bangalore - 560001
v	Account No.	840420110000760
vi	IFSC Code:	BKID0008404

7. This Bank Guarantee shall be encashed at the demand of the Employer on or before the due date.

8. The Employer shall have full rights to encash this bank guarantee at any time during the validity period and the 'Tenderer' shall have no right or claim whatsoever in the matter of encashment of the Bank guarantee amount by the 'Employer'. The Bank will be fully responsible in terms of the guarantee and obligation, to make immediate payment to 'Employer', without the consent of the Tenderer and without referring the matter to the 'Tenderer'.

9. The Bank will deliver the money required by the 'Employer' immediately on demand without delay without reference to the 'Tenderer' and without the necessity of a previous notice or of judicial or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the 'Tenderer'.

10. Courts at Bengaluru, Karnataka, India shall have exclusive jurisdiction for adjudicating the disputes arising out of the encashment of the Guarantee, and, the said Bank undertakes not to revoke this Guarantee during its currency, except with the previous consent of the 'Employer' in writing and agree that any change in the constitution of the Bank shall not discharge its liability hereunder.

11. This Bank Guarantee will not be discharged due to the change in the constitution of the 'Tenderer' or change in the constitution of the bank.

12. This Deed of guarantee is signed and executed by Shri/Smt _____ and Shri/Smt _____ who is/are authorized by the Bank for issuing the guarantee on its behalf and their ID No/s. and Email address/es being_____ & _____ and _____ & _____ respectively.

13. The Bank's liability under this Guarantee shall not exceed the amount of _____ *[Indian Rupees/Foreign Currency/ies to be specified in words and figures]*.

14. This guarantee shall be valid till _____ *[Date to be mentioned]*.

15. The pendency of any dispute or legal proceedings shall not affect this guarantee in any manner.

16. It is hereby agreed that the liability of the Bank under this guarantee shall cease on whichever of the following events first occurs.

a) Payment by the Bank of the guaranteed sum in full to the 'Employer',

or

b) Receipt of written communication from the 'Employer' to the Bank along with the original Bank Guarantee discharging the Bank of its liability covered by this Bank Guarantee and in case of electronic Bank Guarantee (e-BG), after release/discharge of e-BG by the Employer through NeSL portal.

SIGNATURE AND SEAL OF THE GUARANTOR

DATE: _____
NAME OF THE BANK: _____
ADDRESS: _____

Notes:

1. The stamp paper of appropriate value shall be purchased in the name of the bank, who issues the "Bank Guarantee".
2. The above format shall be used for e-Bank Guarantee also.
3. For issuance of e-BG, the UIN (PAN No.) of BMRCL is AAACB4881D.
4. Tender No. as mentioned in relevant para of ITT pertaining to Tender Security shall be the reference to be mentioned in the e-BG.

ATTACHMENT -9A

FORM OF INSURANCE SURETY BOND FOR TENDER SECURITY (EMD)

(Refer ITT clause 13)

(To be stamped in accordance with the Stamp Act of the Country of Issuing agency)

S.B. No. Dated:

1. In consideration of you, Bangalore Metro Rail Corporation, having its office at B.M.T.C Complex, 3rd Floor, K.H. Road, Shanthinagar Bengaluru-560 027, India (hereinafter referred to as the "Authority", which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the Bid of ……and having its registered office at ……(and acting on behalf of its Consortium) (hereinafter referred to as the "Bidder" which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for the …… (herein after referred to as "the Project") pursuant to the Tender Document dated ..... issued in respect of the Project and other related documents including without limitation the draft contract agreement (hereinafter collectively referred to as "Bidding Documents"), we (Name of the Surety Insurer) having our registered office at..... and one of its branches at..... (hereinafter referred to as the "Surety Insurer "), at the request of the Bidder, do hereby in terms of Clause 13 of ITT of Bid Document, irrevocably, unconditionally and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of Rs. …….... (hereinafter referred to as the "Surety Bond") as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Bidder, if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.

2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Surety Insurer.

3. We, the Surety Insurer, do hereby unconditionally undertake to pay the amounts due and payable under this Surety Bond without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Surety Insurer under this Surety Bond. However, our liability under this Surety Bond shall be restricted to an amount not exceeding Rs……

4. This Surety Bond shall be irrevocable and remain in full force for a period of 180 days from the Bid Due Date inclusive of a claim period of 60 days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Surety Insurer, and shall continue to be enforceable till all amounts under this Surety Bond have been paid.

5. We, the Surety Insurer, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, Inter alia, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.

6. The Surety Bond shall not be affected by any change in the constitution or winding up of the Bidder or the Surety Insurer or any absorption, merger or amalgamation of the Bidder or the Surety Insurer with any other person.

7. To give full effect to this Surety Bond, the Authority shall be entitled to treat the Surety Insurer as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Surety Insurer under this Surety Bond from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Surety Insurer shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Surety Insurer from its such liability.

8. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given in writing or made if addressed to the Surety Insurer and sent by courier or by registered post or by certified e-mail to the Surety Insurer at the address or e-mail set forth herein.

9. We undertake to make the payment on receipt of your notice of claim on us addressed to name of Surety Insurer along with branch address and delivered at our above branch who shall be deemed to have been duly authorized to receive the said notice of claim.

10. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Surety Insurer and the Surety Bond herein contained shall be enforceable against the Surety Insurer, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Surety Insurer hereunder, be outstanding or unrealized.

11. We, the Surety Insurer, further undertake not to revoke this Surety Bond during its currency except with the previous express consent of the Authority in writing.

12. The Surety Insurer declares that it has power to issue this Surety Bond and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Surety Bond for and on behalf of the Surety Insurer.

13. For the avoidance of doubt, the Surety Insurer's liability under this Surety Bond shall be restricted to Rs. …….. The Surety Insurer shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Surety insurer in accordance with paragraph 9 hereof, on or before [*** (indicate date falling 180 days after the Bid Due Date)].

14. This Surety Bond shall also be operable at our …….., branch at New Delhi, from whom, confirmation regarding the issue of this Surety Bond or extension/renewal thereof shall be made available on demand. In the contingency of this Surety Bond being invoked and payment hereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

15. The Insurance Surety Bond shall be verified from the specific portal created for this purpose.

Signed and delivered by ……..Company

By the hand of Mr./Ms.....it's... and authorized official

(Signature of the Authorized Signatory)

(Official Seal)

ATTACHMENT -10

FORM OF BANKERS CERTIFICATE for LIQUIDITY

This is to certify that M/s. _____ is a reputed company with a good financial standing. If the contract for the work of _____ (Name of work) is awarded to the above firm, we shall be able to provide over draft/credit facilities to the extent of Rs._____ (in words Rupees_____) to meet the working capital requirement for executing the above contract.

Signature_____

Name of the issuing official of the Bank _____

Designation_____

Bank Name _____

Address_____

Phone No_____

Fax No_____

ATTACHMENT -11

TENDERER'S BRIEF OF TECHNICAL DETAILS

(To be submitted on Tenderer's letterhead)

The Tenderer shall prepare and submit the following technical details in brief:

1. The general understanding and comprehension of the work involved.

2. The general approach and construction methodology proposed for performing the work.

3. A detailed overall Work Programme proposed for performing the work in terms of weeks in the form of a Bar Chart indicating the duration and timing of all activities in consistent with the laid down key dates and total completion period of work given in the Employers Requirements (scope of work).

4. Details of Key personnel proposed for performing the work as per Employers Requirements (scope of work).

5. Details of Equipment proposed (own & hired separately) for performing the work as per Employers Requirements (scope of work).

6. Outline Quality control Plan, Site safety plan & Environmental control plan proposed for performing the work.

Encl: All details are enclosed duly signed & stamped

Yours faithfully,

(Signature) ……
Name of signatory: ……
Capacity of signatory: ……
Name and address of Tenderer

Notes:

1. These details are required to understand the capacity of the tenderer for performing the work.

Section-E: General Conditions of Contract (GCC)

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Section-E: General Conditions of Contract (GCC)

1 DEFINITIONS AND INTERPRETATION

Definitions **1.1** The following contract terms and expressions as used in the contract defined shall have the meanings assigned to them, except where the context otherwise requires. Words indicating persons or parties include corporations and other legal entities except where the context requires otherwise.

1.1.1 **Documents**

1.1.1.1 **"Appendix"** means the completed pages in title Appendix, which are appended to and form part of the Tender.

1.1.1.2 **"Construction and/or Manufacture Documents"** means all drawings, calculations, computer software (programs), samples, patterns, models, operation and maintenance manuals, and other manuals and information of a similar nature, to be submitted by the Contractor.

1.1.1.3 **"Contract"** means the written Contract Agreement, the Letter of Acceptance, General Conditions of Contract, Special Conditions of Contract, the Employer's Requirements& Technical specifications, the Tender, the Notice of Invitation to Tender, Instructions to Tenderers, the Contractor's Proposal, the Schedules of BOQ, Clarifications issued and such further documents which are listed in the Letter of Acceptance or Contract Agreement (if completed).

1.1.1.4 **"Contract Agreement"** means the contract agreement pursuant to acceptance letter referred to in Sub-Clause 1.4. It shall also include all subsequent modifications/ amendments to record the Contract as a result of the communications or negotiation proceedings between the parties.

1.1.1.5 **"Contractor's Proposal"** means the proposal submitted by the Contractor with the Tender, as modified and accepted by the Employer and included in the Contract. Such documents may include the Contractor's preliminary Design.

1.1.1.6 **"Design Data"** means all specifications, plans, drawings, details, graphs, sketches, models, levels, setting-out dimensions, calculations duly checked by the Contractor and other documents relating to the Design of the works prepared or to be prepared by or on behalf of the Contractor.

1.1.1.7 **"Drawings"** means the Employer's Drawings and the Drawings submitted by the Contractor and any modification of such drawings as any, from time to time, be furnished or for which the Engineer has issued a Notice of No Objection.

1.1.1.8 **"Employer's Requirements"** means the description of the scope, standard, specifications, drawings, programme of work, indigenisation programme (where applicable) as included in the Contract, and any alterations and modifications thereto in accordance with the Contract.

1.1.1.9 "**Letter of Acceptance"** means the letter from the Employer or the Engineer, or a person nominated by them on their behalf for this purpose, to the Contractor, conveying acceptance of the Tender, subject to any modifications agreed to between the parties and includes advance acceptance of the tender.

1.1.1.10 **"Safety, Health and Environmental (SHE) Manual"** means the Employer's manual containing the requirements and conditions to be met during the execution of the Works by the Contractor.

1.1.1.11 **"Schedules"** means the information and data submitted with the Tender, as included in the Contract.

1.1.1.12 **"Tender or Bid** "means the completed offer made by individual, Firm, Company, Corporation, Joint Venture or Consortium for the execution of the works.

1.1.1.13 **Deleted**

1.1.1.14 **"Special Conditions of Contract"** means any special conditions of contract issued by the Employer prior to submission of the Tender or negotiated and agreed in writing by the Employer and the Contractor prior to acceptance of the Tender.

1.1.1.15 **"Works Programme"** means the programme showing the sequence, method and timing of investigations, Design, issue of No Objection Notices, execution, manufacture, delivery to site, erection, installation, testing, commissioning of the Works, indigenisation (where applicable) and related activities in the form and content prescribed by the Employer's Requirements& Technical specifications, or any amended or varied version thereof, as submitted by the Contractor and for which the Engineer has issued a Notice of No Objection.

1.1.2 **Persons**

1.1.2.1 **"Party**" means the Employer or the Contractor as the context requires.

1.1.2.2 **"Contractor**" shall mean the person, firm, association of firms, Company or Corporation, Joint Venture identified as the Contractor and whose tender for the work has been accepted by the Employer and responsible for carrying out the construction scope, in accordance with the Contract Documents and unless the context otherwise so requires shall include his/their executors, administrators, successors and permitted assignees.

1.1.2.3 **"Contractor's Representative"** means the person (if any) named as such in the Contract or other person appointed from time to time by the Contractor under Sub Clause 4.3.

1.1.2.4 **"Designated Contractors"** means any of the following whose activities or the works they are engaged to carry out, affect or are affected by the Works, in any way or at any time:

(a) Contractors, design consultants and utility authorities engaged on the Project from time to time by the Employer;

(b) Sub-contractors of any tier of the contractors above; provided that the definition shall exclude the Contractor and his sub-contractors of any tier in relation to the Works.

1.1.2.5 **"Designer"** means the Contractor, or part of the group forming the contractor, person, firm or company or group of companies, or any replacement, carrying out the Design or part thereof.

1.1.2.6 **"Employer"** means BANGALORE METRO RAIL CORPORATION LIMITED (BMRCL), its legal successors and assignees.

1.1.2.7 **"Engineer"** means Chief Engineer or Addl. Chief Engineer or Deputy Chief Engineer or General Consultant or any person/party nominated or appointed from time to time by the Employer to act as the Engineer for the purposes of the Contract and notified as such in writing to the Contractor.

1.1.2.8 **"General Consultant" or "GC"** means the firm/JV or consortium of firms appointed by the Employer as a general consultant to the Employer or any other person appointed from time to time and notified as such to the Contractor.

1.1.2.9 **"Sub-Contractor**" means the Individual, Firm, Company, Corporation, Joint Venture or Consortium, having direct contract with the Contractor and to whom any part of the Work has been sublet by the Contractor, with prior permission of the Engineer or Employer and shall include his heirs, his executors, administrators, successors, legal representatives, as the case may be.

1.1.2.10 "**Partner/member**" means partner or member of joint venture, as the context requires.

1.1.2.11 "**Tenderer" or "Bidder**" means the person, firm or corporation, Joint Venture submitting a tender against the notice of invitation of tender and shall include his heirs, his executors, administrators, successors, legal representatives, as the case may be. Tenderer shall mean 'Contractor' wherever the context so requires and vice-versa.

1.1.3 **Dates, Times and Periods**

1.1.3.1 **"Commencement Date** "will be reckoned as the date of signing of Contract Agreement.

1.1.3.2 **"Contract Period"** means the period from the Commencement Date to the end of final Defects Liability Period.

1.1.3.3 **"Day"** means a calendar day; **"Week"** means 7 calendar days; **"Month"** means Georgian calendar month and **"Year"** means 365 calendar days.

1.1.3.4 **"Gazetted Holiday"** means every holiday which is observed by Bangalore Metro Rail Corporation Limited as a gazetted holiday.

1.1.3.5 **"General Holiday"** means Sunday.

1.1.3.6 **"Key Date"** means a date identified as such in the Contract documents as the same may be extended by the Engineer pursuant to GCC clause 8.4.

1.1.3.7 **"Stage"** means level of progress of the works identified as such and more particularly described in the Employer's Requirements for which a Key Date for the achievement thereof is stipulated in the Contract.

1.1.3.8 **"Time for Completion"** means the time for completing the Works physically or a section or a part thereof (as the case may be), and passing the Tests on Completion including Integrated Testing and Commissioning, as stated in the Contract and as applicable for the nature of contract calculated from the Commencement Date.

1.1.4 **Tests and Completion**

1.1.4.1 **"Factory Tests"** means the tests required to be carried out in the factory premises on components, equipment, subsystem, system, etc. during and/or after manufacture in the factory.

1.1.4.2 "**Integrated Testing"** In the contracts where applicable means the programme of tests performed by the Contractor at the direction of the Engineer.

1.1.4.3 "**Key date certificate"** means the certificate to be issued by the Engineer in relation to the achievement or otherwise of Key dates.

1.1.4.4 **"Performance Certificate"** means the certificate issued by the Engineer under Sub-Clause 10.9.

1.1.4.5 **"Taking over Certificate,"** means a certificate issued under Clause 9.1.

1.1.4.6 **"Tests on Completion includes Integrated test on completion"** means the tests specified in the Contract and designated as such, and any other such tests as may be agreed by the Engineer and the Contractor, or instructed as a Variation, which are to be carried out before the Works, or any Section are taken over by the Employer.

1.1.5 **Money and Payments**

1.1.5.1 **"Contract Price** "or **"Contract Value"** means the sum stated in the Letter of Acceptance as payable to the Contractor for execution of the work including remedying of any defect during completion, defect liability period therein, subject to such additions thereto or deductions there from as may be made under the provisions of the Contract.

1.1.5.2 **"Tender Price"** is the quoted price at the time of bidding in the Financial Proposal.

1.1.5.3 **"Cost"** means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

1.1.5.4 **"Final Payment Certificate"** means the payment certificate issued by the Engineer under Sub-Clause 11.11.

1.1.5.5 **"Final Statement"** means the agreed statement defined in Sub-Clause 11.9.

1.1.5.6 **"Foreign Currency"** means a freely convertible international trading currency in which part of the Contract Price is payable, but not the Local Currency.

1.1.5.7 **"Interim Payment Certificate"** means any payment certificate issued by the Engineer under Sub-Clause 11.5, other than the Final Payment Certificate.

1.1.5.8 **Local Currency"** means Indian Rupees (INR).

1.1.5.9 **"Retention Money"** is the Security Deposit for the performance of the obligations of the contractor during the contract period.

1.1.5.10 "**Tender Security/Earnest Money"** means a tender guarantee in the form of a Bank Guarantee (in 'Physical form' or 'e- Bank Guarantee') / Pay Order /Bankers Cheque/Demand draft to be furnished along with tender by the Tenderer.

1.1.5.11 "**Performance Security**" means a guarantee for satisfactory completion of the work by the contractor as per Sub clause 4.2.1 of GCC and the Employer is guaranteed compensation for any monetary loss up to the amount of performance guarantee.

1.1.6 **Other Definitions**

1.1.6.1 **"Contractor's Equipment"** means all machinery, apparatus, appliances, other things of whatsoever nature required for purpose of the Contract, including without limitation, Contractor's plant and equipment, or materials to or from the Site, but does not include Plant, or Materials intended to form or forming part of the Permanent Works.

1.1.6.2 **"Materials"** means things of all kinds (other than Plant) to be provided and incorporated in the Permanent Works by the Contractor, including the supply-only items (if any), which are to be supplied by the Contractor as specified in the Contract.

1.1.6.3 **"Plant"** means the machinery, equipment, and apparatus and the likes, intended to form or forming part of the Permanent Works, including the supply-only items (if any), which are to be supplied by the Contractor as specified in the Contract.

1.1.6.4 **"Section/Station"** means a part of the Works specifically designated in the Scope of Work as a Section/Station (if any).

1.1.6.5 **"Site"** means the places provided by the Employer where the Works are to be executed and to which Plant and Materials are to be delivered and any other place as may be specifically designated in the Contract as forming part of the Site.

1.1.6.6 **"Variation"** means any alteration and/ or modification to the Employer's Requirements& Technical specifications, which is instructed by the Engineer or approved as a variation by the Employer, in accordance with Clause 12.

1.1.6.7 **"Works"** means the work to be executed in accordance with the Contract and shall include both Permanent Works and Temporary Works.

1.1.6.8 "**Permanent Works"** means the permanent works to be executed, completed and maintained in accordance with the Contract.

1.1.6.9 **"Temporary Works**" means all temporary and enabling works of any kind required for the execution and completion of the works and the remedying of any defect therein, and which subsequently be removed by the Contractor.

1.1.6.10 **"Project"** means Bangalore Metro Rail Project.

Interpretation **1.2** In the Contract except where the context requires otherwise:

1.2.1 (a) words indicating one gender include all genders;
(b) words indicating the singular also include the plural and words indicating the plural also include the singular and
(c) "Written" or "in writing" means hand-written, type written, printed or electronically made and resulting in a permanent record.

The marginal words and other headings shall not be taken into consideration in the interpretation of these conditions. Various clauses of GCC are to be read with relevant 'Contract data' appended to the GCC and are to be interpreted accordingly.

1.2.2 Terms and expressions not herein defined shall have the meaning assigned to them in the "Indian General Clauses Act 1897" or the Indian Contract Act or the Indian Sale Goods Act or any other applicable Indian Law, as case may be.

Law and Language **1.3** The Contract shall be governed by the Acts and Laws of India, the rules, regulations and bye-laws of the concerned public bodies and authorities.
Language of the Contract shall be English.

Contract Agreement **1.4** The Employer and the Contractor shall execute a Contract Agreement in the form annexed to the Contract Forms, incorporating any necessary modifications, within the timeframe specified in the Contract Data. The Contractor shall be responsible for and bear all costs associated with stamp duties, registration fees, and other applicable levies imposed by law.

If the Contractor is a JV, the authorized representative of each member of the JV shall sign the Contract agreement.

Modification to contract to be in writing:
In the event of any of the provisions of the contract requiring to be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the Employer and the Contractor, and no work shall proceed under such modifications until this has been done. Any verbal or written arrangements abandoning, modifying, extending, reducing or supplementing the contract or any of the terms thereof shall be deemed conditional and shall not be binding on the Employer unless and until the same is incorporated in a formal instrument and signed by the Employer and the Contractor, and till then the Employer shall have the right to repudiate such arrangements.

Priority of Documents **1.5** The documents forming the Contract are to be taken as mutually explanatory of one another. If there is any conflict, ambiguity or discrepancy in the documents, the Engineer shall issue any necessary clarification or instruction to the Contractor, and the priority of the documents shall be as follows,

1. Contract Agreement.
2. Letter of Acceptance.
3. Clarifications, Addenda, Corrigenda Issued to Tender document (if any)
4. Pricing Document
5. Special Conditions of Contract
6. Contract forms.
7. General Conditions of Contract
8. Employer's Requirement &Technical Specifications
9. Drawings
10. Any other document forming part of the Contract

Care and Supply of Documents **1.6** The specification and drawings shall be in the custody and care of the Employer. Unless otherwise stated in the contract, one copy of the contract and two copies of each subsequent Drawing shall be supplied to the contractor, who may make or request further copies at the cost of the contractor.

The Construction and/or Manufacture Documents shall be in the custody and care of the Contractor during the Contract. Unless otherwise stated in the Employer's Requirements, the Contractor shall provide six copies (physical) and one digital copy for the use of the Engineer and assistants.

The Contractor shall keep on Site one complete set of the documents forming the Contract, the Construction and/or Manufacture Documents, Variations, other communications given or issued from time to time and the documents/samples mentioned in Sub-Clause 5.3. The Employer, the Engineer and their assistants shall have the right to access these documents all reasonable times.

On discovery of any technical error or defect in a document intended to be used for the purpose of Contract, the Contractor shall promptly give notice to the Engineer of such error or defect.

Communi-cations **1.7** All communications between the parties, unless otherwise specified, shall be valid and effective only when made in writing. A notice shall be deemed effective only when sent to the party's designated address via speed post, courier, email to the specified email ID, or delivered by hand.

Employer's Use of Contractor's Documents **1.8** As between the Parties, the Contractor shall retain the copyright and other intellectual property rights over the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

(a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,

(b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and

(c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

After payment of the consideration under the Contract to the Contractor all the intellectual property rights of Contractor vested in the Works/services, executed under the Contract, will get transferred and vested with the Employer. The contractor shall take necessary action in this regard.

Contractor's Use of Employer's Documents **1.9** As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Employer's Requirements& Technical specifications and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract.

They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

Compliance with Statutes, Regulations and Laws **1.10** The Contractor shall familiarise themselves and conform to the requirement in all aspects with:

(a) the provision of any enactment in India as applicable from time to time

(b) the regulations or bye-laws of any local body and utilities including, but not limited to Electricity Supply Regulation Act, Indian Electricity Rules, Pollution Control Rules, BBMP rules and regulations and byelaws etc.

(c) The Contractor shall be bound to give all notices required by statute, regulations or bye-laws, as aforesaid and to pay all fees and bills payable in respect thereof. The Contractor will arrange necessary clearances and approvals before the Work is taken up.

Ignorance of Rules, Regulations and Bye-laws shall not constitute a basis for any claim at any stage of work. The Contractor shall indemnify the Employer against all penalties and liabilities of every kind of breach of any such enactment, laws, regulations, bye-laws or rules.

Joint and Several Liability **1.11** If the Contractor is (under applicable Laws) a joint venture or consortium of two or more Parties:

a) these parties shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;

b) these parties shall notify the Employer of their lead memder who shall have authority to bind the Contractor and each of these parties; and

c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.

Severability **1.12** If any clause, provision, section or part of the Contract is ruled invalid by a court of competent jurisdiction, then the parties shall: (a) promptly meet and negotiate a substitute for such clause, provision, section or part, which shall, to the greatest extent legally permissible, effect the original intent of the parties, and (b) if necessary or desirable, apply to the court which declared such invalidity for a judicial construction of the invalidated portion to guide the negotiations. The invalidity or enforceability of any such clause, provision, section or part shall not affect the validity or unenforceability of the balance of the Contract, which shall be construed and enforced as if the Contract did not contain such invalid or unenforceable clause, provision, section or part

2 The Employer

General Obligations **2.1** Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract Data and shall pay the contractor in accordance with the contract.

Access to and Possession of the Site **2.2** If no such time is stated in the Contract Data, the Employer shall grant the Contractor right of access to, and possession of, the Site progressively. The Contractor will draw/modify the schedule for completion of Works according to progressive possession/right of such sites. The right and possession may not be exclusive to the Contractor.

If the Contractor suffers delay as a result of a failure by the Employer to grant right of access to, or possession within such time, the Contractor shall give notice to the Engineer within a period of 28 days of such occurrence. After receipt of such notice, the Engineer shall proceed to determine any extension of time to which the Contractor is entitled and shall notify the Contractor accordingly.
For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time and no monetary claims whatsoever shall be paid or entertained on this account.

Permits, Licences or Approvals **2.3** It shall be Contractor's exclusive responsibility to get approvals, permits or license required for the Contract. However, the Employer may (where he is in a position to do so) provide reasonable assistance to Contractor at the request and cost of the Contractor in getting Permits, License or Approvals required during the Contract.
The rendering of such assistance by the Employer shall not be interpreted as a pretext by the Contractor as condoning of any delay or non-performance of any of the Contractors obligations. The following-up of all such applications shall be the responsibility of the Contractor.

Assignment by the Employer **2.4** The Employer shall be fully entitled without the consent of the Contractor, to assign the benefit of the Contract or any part thereof and any interest therein or there under to any third party.

3 The Engineer

Appointment of Engineer **3.1** The Employer shall notify the Contractor in writing of the appointment and identity of the Engineer and of any replacement from time to time.

Duties and Authorities of the Engineer **3.2** The Engineer shall carry out the duties specified in the Contract. The Engineer shall have no authority to amend the Contract.
The Engineer may exercise the authority specified in, or necessarily to be implied from the Contract. Any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Engineer.

The Engineer shall have no authority to relieve the Contractor of any of his duties, obligations, or responsibilities under the Contract. Engineer shall watch and inspect the Works, monitor the test results and examine any material to be used and workmanship employed by the Contractor in connection with the Works. Any proposal, inspection, examination, testing, consent, approval or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility, including responsibility for his errors, omissions, discrepancies, and non-compliance with Sub-Clause 5.4.

The Engineer shall copy to the Employer all communications given or received by him in accordance with the Contract.

Engineer's Authority to Delegate **3.3** i. The Engineer, with the prior approval of the Employer may from time to time assign and delegate authority to Engineer's representatives/assistants and may also revoke such assignments and delegations. The delegation or revocation shall be in writing and shall be applicable only after same has been notified in writing to the Contractor.

ii. Each Engineer's representative/assistants to whom duties have been assigned or authority has been delegated shall be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any determination, approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test or similar act by an Engineer's representative/assistants shall have the same effect as though the act had been an act of the Engineer. However:

(a) any failure to disapprove any Plant, Material, design and workmanship shall not prejudice the right of the Engineer to reject such Plant, Material, Design and workmanship;

(b) if the Contractor questions any determination or instruction of Engineer's representative/assistants, the Contractor may refer the matter to the Engineer within three days of such decision having been given, who shall confirm, reverse or vary such determination or instruction.

Engineer's Instructions **3.4** Engineer may issue to the Contractor instructions (at any time) which may be necessary for the execution of the works. The Contractor shall comply with instructions given by the Engineer.
The Contractor shall only take instruction from the Engineer, or from the Engineer's Representative or an Assistant to whom the appropriate authority to give instruction has been delegated under Sub-clause 3.3.

No act or omission by the Engineer or Engineer's representative/assistants in the performance of any of the Engineer's duties or the exercise of any of the Engineer's powers under the Contract shall, in any way, operate to relieve the Contractor of any of the duties, responsibilities, obligations or liabilities imposed upon the Contractor by any of the provisions of the Contract.

Agreement or Determination **3.5** When the Engineer is required to determine value, cost or extension of time, he shall consult with the Contractor and the Employer in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall determine the matter fairly, reasonably and in accordance with the Contract, with the approval of Employer.

Meetings called by the Engineer **3.6** The Engineer may require the Contractor and/or its representative to attend management meetings to discuss arrangements for future work or other matters related to the execution of the Works.

4 The Contractor

General Obligations **4.1** The Works completed by the Contractor shall be in full compliance with the Contract, fit for their intended purpose as defined in the Contract, and shall include:

- Any work necessary to meet the Employer's Requirements, Technical Specifications, the Contractor's Proposal, and Contract Forms

- Any work implied by the Contract or arising from the Contractor's obligations
- All works not explicitly mentioned in the Contract but necessary for stability, completion, safe operation, or reliable and efficient functioning of the Works.

The Contractor shall design (if in the scope of work), manufacture, execute, install, complete, test and commission, the Works, including providing Construction and/or Manufacture Documents, within the Time for Completion and shall remedy any defects within the Contract Period. The Contractor shall provide all superintendence, labour, Plant, Materials, Contractor's Equipment, Temporary Works and all other things, whether of a temporary or permanent nature, required in and for such design, manufacture, execution, installation, completion, testing and commissioning and remedying of defects.

Before commencing design, (if in the scope of the contract) the contractor shall satisfy himself regarding the Employer's Requirements &Technical specifications (including design criteria and calculations, if any) and the items of reference mentioned in Sub-Clause 4.8.
The Contractor shall give notice to the Engineer of any error, fault or other defect in the Employer's Requirements or such items of reference. After receipt of such notice, the Engineer shall determine whether Clause 12 shall be applied, and shall notify the Contractor accordingly.

The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations, of all methods of construction, manufacture, and of all the Works, irrespective of any approval or consent by the Engineer.

The Contractor shall be deemed to have satisfied himself before submitting his Tender as to the correctness and sufficiency of his Tender to cover all his risks, liabilities and obligations set out in or implied by the Contract and all matters and things necessary for the proper Design, manufacture, execution, installation, completion, testing, commissioning of the Works and remedying of the Defects.
The Contractor acknowledges responsibility for ascertaining and securing at his own cost:

(a) conditions bearing upon the proper transportation, disposal, handling and storage of materials (including but not limited to hazardous toxic substances and excavated materials);
(b) availability of electricity, water and gas;
(c) availability of skilled manpower;
(d) the character of equipment and facilities needed preliminary to and during the manufacture, installation, execution, testing, and commissioning of the Works and remedying of any defects;
(e) the protection of the environment and adjacent structures which will be necessary preliminary to and during the manufacture, installation, execution, testing and commissioning of the Works and remedying of any defects;
(f) the location of and the authorisation required for and the means of diversion of any services and facilities required for the purposes of the Works.

The Contractor shall whenever require by the Engineer, submit details of the arrangement and methods which the Contractor proposed to adopt for the execution of the Works. No alteration to these arrangements or methods shall be made without the approval of the Engineer.

Performance Security, Guarantee, Warranties and Undertakings

4.2 "Performance Security" refers to a guarantee for the satisfactory completion of the work by the Contractor and compensates the Employer for any monetary loss up to the amount of the Performance security

Performance Security **4.2.1**

i. The successful tenderer shall furnish a Performance Security for the amount specified in the Contract Data. The Performance Security shall be provided in the form of an unconditional and irrevocable **Bank Guarantee** (in physical form or e-BG) **or an Insurance Surety Bond** drawn in favour of **Bangalore Metro Rail Corporation Limited** and **payable & extendable at a designated branch in Bangalore**; in the prescribed form given in Contract form-2/2A to Contract Forms.
   - In case of Bank Guarantee, it shall be issued from an Indian Schedule bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule.
   - In case of Insurance Surety Bond, tit shall be issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI).
   - The Bank Guarantee shall be denominated in the type and proportion of currencies in which the Contract Price is payable. Bank Guarantee/ Insurance Surety Bond can be furnished by any member or members of the JV.

ii. The Performance Security (including Additional Performance Security if any) shall be initially valid and enforceable up to 60 days beyond completion period. In case the completion period is extended, then the contractor is required to extend the validity of Performance Security Bank Guarantee/ Insurance Surety Bond at his own cost. If the contractor fails to extend the validity of the Performance Security BG/ Insurance Surety Bond, then Employer shall claim the full amount of Performance Security.

iii. If the offer of the successful Tenderer is considered as abnormally low, seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require that the amount of the performance security set forth above vide sub para (i) be increased and an additional performance security may be obtained at the expense of the Successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the contract.

iv. The approved format is provided in the “contract forms of Contract” and may be modified by the employer to comply with the tender condition or any other form approved by the Employer.

v. In the case of a Joint Venture (JV), the Performance Security may be submitted by any one or more of the JV members.

vi. The Extension of Time for submission of Performance Security beyond 30 (Thirty) days up to 60 days from date of issue of LoA may be given by the Authority who is competent to sign the Contract Agreement. However, a Penal Interest of 15% per annum shall be charged for the entire period i.e., from the date of issue of LoA to the date of submission of Performance Security.

Forfeiture **4.2.2**

Failure by the successful tenderer to furnish the required Performance Security shall constitute grounds for annulment of the contract award and forfeiture of the Tender Security

The failed Contractor shall be debarred not only from participating in re-tender for that work but also in any other tender of BMRCL for a period of one year from date of issue of letter of annulment of LOA

The Performance Security amount as may be consider fit shall be liable to be forfeited by the Employer at the discretion of the Employer, in the event of any breach of Contract on the part of the Contractor.

Release of performance security **4.2.3**

After completion of the entire Work, the Performance Security shall be released to the Contractor, on issue of last Taking Over Certificate if more than one Certificate exist, by the Engineer, in accordance with Sub-Clause 9.1 and 9.2 of these Conditions. The release of Performance Security shall not relieve the Contractor from his obligations and liabilities, to make good that may be detected during the Defects Liability Period.

Guarantees and Warranties **4.2.4**

Within time period stated in 'Contract Data', Contractor shall submit to the Employer:

(i) An Undertaking and written Guarantee in the approved formats from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Tender and against which the Employer shall have raised no objection.
(ii) A contractor warranty in the approved format. The formats of Parent Company Undertaking, Parent Company Guarantee, and Contractor's Warranty are provided in the contract forms.

In the event that the Contractor shall comprise two or more members, corporations acting in partnership, joint venture, consortium or otherwise each such member or corporation shall submit a parent company Undertaking and Guarantee.

Contractor's Representative **4.3**

The contractor shall appoint the Contractor's Representative and shall give him/her all authority necessary to act on the Contractor's behalf under the Contract, except another replacement of the Contractor's Representative.
The Contractor's Representative shall be qualified, experienced and competent in the main engineering discipline applicable to the works and fluent in English language.

Unless the Contractor's Representative is named in the Contract, the Contractor shall, within 14 days of signing the 'Contract Agreement', submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint. The Contractor shall not revoke the appointment of the Contractor's Representative without the prior consent of the Engineer and appoint a replacement (unless the Contractor's Representative is unable to act as a result of death, illness, disability or resignation) The Contractor's Representative so nominated shall have full authority to act on behalf of the Contractor. The Contractor's Representative shall give his whole time to directing the preparation of the Construction and/or Manufacture Documents and the execution of the Works. The Contractor's Representative shall receive (on behalf of the Contractor) all notices, instructions, consents, approvals, certificates, determinations and other communications under the Contract. Whenever the Contractor's Representative is to be temporarily absent from the Site during execution of works, a suitable replacement person shall be appointed, with prior consent of Engineer.

Failure on part of the Contractor to comply with these provisions shall constitute a breach of Contract leading to action under Sub Clause no. 13.2.

The Contractor's Representative may delegate any of his powers, functions and authorities to any competent person, and may at any time revoke any such delegation. Any such delegation or revocation shall be in writing and shall not take effect until the Engineer has given prior consent thereto. The Contractor's Representative and such persons shall be fluent in the language of day–to-day communication and the Contractor shall be bound by and fully liable for the acts or omissions of the Contractor's Representatives or any of his employees and/or delegates, agents or nominees.

Facilities for and Co-ordination with Others **4.4**

The Contractor shall not impede and shall afford all necessary facilities, access and/or services to the Employer, Engineer, Designated Contractors, utility undertakings, other relevant authorities and other contractors (whether employed by the Employer or not) who are carrying out on, or in the vicinity of, the Site, works not included in the Contract but forming part of the Project:

a The Contractor shall take all reasonable steps to ensure that the Works are co-ordinated and integrated with the Design, manufacture, installation execution and testing of such other works and shall in particular (but without limitation):

(i) comply with any direction which the Engineer may give for the integration of the Design with the design of any other part of the Project;

(ii) consult, liaise and co-operate with those responsible for carrying out such other works, including where necessary, in the preparation of the respective designs, the preparation of co-ordinated programmes, method statements, co-ordination drawings and specifications together with arrangements of service priorities and zoning;

iii) Subjected to the applicability of the Clause 7.12, Contractor shall participate in integrated testing and commissioning of the system with designated contractors and demonstrate to the Engineer's satisfaction that the Works have been designed and constructed in a manner compatible with the works of other designated contractors.

b The Contractor shall undertake Design co-ordination with other contractors who are carrying out works forming part of the Project as described in the Employer's Requirements. At the end of each such co-ordination period, the Contractor and the other contractor with whose works the interface period refers shall jointly state in writing that their design co-ordination activities are complete and that their respective designs are integrated and can be finalised without interference with each other's designs or the designs with which their designs have already been integrated. A copy of this joint written statement shall be provided to the Engineer within 7 days of the end of the said design co-ordination period. Unless and until copies of all relevant and necessary design co-ordination statements have been submitted to the Engineer, the Engineer shall be entitled to suspend any review or further review of the Contractor's or the other contractor's design submissions. Such suspension shall not be grounds for the Contractor to claim nor shall be entitled to receive an extension of time or additional payments.

c The Contractor shall share within the Site, staging, storage and unloading areas for the use of Designated Contractors, if any, who are undertaking civil work, fare collection system, supply, testing and commissioning of Rolling Stock, escalators, lifts, signalling and telecommunications and traction power installation works, etc. Separate locations shall be provided for each such contractor. The exact size and location of these staging, storage and unloading areas, and the commencement date shall be co-ordinated and agreed during the design interface period with each Designated Contractor.

d Any other contract which depends for its execution on the Contract or upon which the Contract is dependent for its own execution shall be identified by the Engineer as a "Designated Contract". The Contractor shall provide attendance on Designated Contractors in accordance with the Employer's Requirements and as instructed by the Engineer. The identity of the contractor for a Designated Contract may not be known before the execution of the Contract but this shall not be a ground for the Contractor to object to the subsequent appointment of a Designated Contractor.

e The Contractor shall in accordance with the requirements of the Engineer co-ordinate his own Works with that of Designated Contractors through Co-ordinated Installation Programme (CIP) stated in the Employer's Requirements, or as the Engineer may require, and shall afford the Designated Contractors all reasonable opportunities for carrying out their works.

f The Contractor shall afford all reasonable opportunities, for carrying out their work, to other contractors employed by the Employer and their workmen respectively and the workmen of the Employer who may be engaged on or near the Site of any work, ancillary to the Works, but, not included in the Contract and shall not cause them inconvenience.

g If the Contractor shall suffer delay by reason of failure by any Designated Contractor to meet the specified installation interfacing and co-ordination, completion dates, which delay shall be caused otherwise than by fault of the Contractor, or, if compliance with sub-clause (f) herein shall involve the Contractor in delay beyond that which could be reasonably foreseen by an experienced contractor at the time of tender, then the Engineer shall take such delay into account in determining any extension of time to which the Contractor is entitled under the Contract.

h It shall be the responsibility of the Contractor to ensure that the full extent of the Works under the Contract and the works to be carried out by Designated Contractors within the Works or, in, on, under, through and over the Site are co-ordinated and integrated in their design, manufacture, installation and construction. Such responsibility shall neither be mitigated nor in any other way affected by virtue of similar responsibilities being placed on other contractors.

The Contractor shall be deemed to have made adequate allowance in the Contract Price and in the Works Programme in respect of these obligations.

If any act or omission of the Contractor whether directly or indirectly results in the delay in the execution of the works of a Designated Contractor, the Contractor, in addition to his liability in respect of Liquidated damages if they become due, shall pay to the Employer, or the Engineer may deduct from Interim Payment Certificates such amount as the Engineer shall have certified in respect of additional payments or costs to the Designated Contractor in respect of such delay.

Sub-Contractors **4.5**

The Contractor may sub-contract works only with prior consent of Engineer/Employer and limited to the value as stated in ‘contract data.

4.5.1 The Contractor shall not subcontract any part of works for which subcontracting is not permitted as stated in Contract Data.

4.5.2 Unless otherwise stated in the Special Conditions of Contract.

a) the Contractor shall not be required to obtain consent for purchases of Materials which are in accordance with the standards specified in the Contract or provisions of labour or for the sub-contracts for which the Sub-contractor is named in the Contract;

b) the prior consent of the Engineer shall be obtained for other proposed Sub-contractors;

c) not less than 28 days before the intended date of each Sub-contractor commencing work, the Contractor shall notify the Engineer of such intention; and the Contractor shall give fair and reasonable opportunity for contractors in India to be appointed as Sub-contractors.

4.5.3 The Contractor shall be responsible for observance by all Sub-contractors of all the provisions of the Contract. The Contractor shall be responsible for the acts or defaults of any Sub-contractor, his representatives or employees, as fully as if they were the acts or defaults of the Contractor, his representatives or employees and nothing contained in above Sub-clause (a) shall constitute a waiver of the Contractor's obligations under this contract. The Contractor shall provide to the Engineer the details of subcontracts upon request of the Engineer. The Contractor shall Endeavour to resolve all matters and payments amicably and speedily with the sub-contractors.

In the event of contractor's default for payment to any of the sub-contractors or Vendors of any tier engaged by him for carrying out of this Contract, the Employer shall reserve the right to make payment to such affected subcontractors or vendors on behalf of contractor and further employer may engage the same subcontractor or vendor on behalf of contractor and make payment directly to complete that part of the work and any sums so paid including interest shall be debited to the Contractor's account.

4.5.4 The Contractor shall ensure that their Sub-contractors, material/equipment suppliers, Consultants and other agencies deployed by them in connection with execution of the Contract do not make any claim or raise any dispute before BMRCL. For this, necessary provision is to be made in the agreement between Contractor and their Sub-contractors/Consultants/other Agencies Similarly the agreement should also incorporate the provision of Dispute Resolution. An undertaking in the format provided in contact forms shall be submitted by Contractor in respect of each such agency:

4.5.5 A copy of the contract between the Contractor and Sub-Contractor shall be given to the Engineer and the Contractor shall not make any modifications without the Engineer's prior written consent. The terms and conditions of subcontracts, including payments to subcontractors, shall be the sole responsibility of the Contractor, and such payments shall be deemed included in the Contract Price. The Contractor shall obtain the Employer's prior written consent to the identity of the subcontractor, which shall be granted after the Employer assesses and satisfies itself regarding the subcontractor's capability, experience, and equipment resources. The Engineer's decision in this regard shall be final and binding. The Contractor shall provide sufficient superintendence to ensure that work carried out by subcontractors complies with the Contract requirements

4.5.6 Engineer's decision to define whether the party is subcontractor or not shall be final and binding on the Contractor.

Employer reserves the right to have access to the agreement/MOU between the contractor and the sub-contractor and demand a copy of the same for records.

The proposed sub-contract terms and conditions shall impose on the sub-contractor such terms of the Contract as are applicable and appropriate to the part of the Works to be sub-contracted, to enable the Contractor to comply with his obligations under the Contract.

4.5.7 Notwithstanding any consent to sub-contract given by the Engineer, if in his opinion he considers it necessary, the Engineer shall have full power to order the removal of any sub-contractor from the Site or off-Site place of manufacture or storage, which power shall not be exercised unreasonably.

Provided further that in the event of poor/unsatisfactory performance of subcontractor in terms of quality, progress, poor workmanship, adherence to safety norms the Engineer may order for removal of such subcontractor from the site of work. The Contractor shall demobilize/remove such subcontractor within 10 days from the receipt of such instructions from the Engineer.

Assignment of Contractor's and Sub-contractor's Obligations **4.6**

The Contractor shall not assign a right or benefit under the Contract without first obtaining Employer's prior written consent, otherwise than by:

a. a charge in favour of the Contractor's bankers of any money due or to become due under the Contract, or
b. Assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

If a Subcontractor's obligations extend beyond the expiry date of Defects Liability Period, then the Contractor shall assign the benefits of such obligations to the Employer.

In the event that a sub-contractor of any tier provides to the Contractor or any other sub-contractor a warranty in respect of Plant, Materials or services supplied in connection with the Works, or undertakes a continuing obligation of any nature whatsoever in relation to such Plant, Materials or services (including without limitation an obligation to maintain stocks of spare parts) extending for a period exceeding that of the Defects Liability Period or where there is more than one Defects Liability Period exceeding that of the latest Defects Liability Period, and if the Engineer so directs in writing within 21 days of the expiry of the Defects Liability Period or the latest Defects Liability Period (as the case may be), the Contractor shall immediately assign or obtain the assignment of the benefit of such warranty or obligation to the Employer or at the direction of the Employer, to any third party referred to in Sub-Clause 2.4.

Compensation for Breach **4.7**

Any breach of Sub-clauses 4.5 to 4.6 shall entitle the Employer to rescind the Contract under Sub-Clause 13.2 and render the Contractor liable for any loss or damage arising from such termination

Setting Out **4.8**

Accurate Setting Out **4.8.1**

The Contractor shall be responsible for

(a) the accurate setting out of the Works in relation to the original points, lines and levels of reference given in the documents provided by the Engineer in writing.
(b) the correctness of position, levels, dimensions and alignments of all parts of the Works
(c) the provisions of all necessary instruments, equipment, apparatus and labour in connection with the foregoing responsibilities
(d) Carefully protecting and preserving all bench marks, sight rails, pegs and other things used in setting out the Works

The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy or correctness thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting out the Works.

Errors in Setting out **4.8.2** If at any time during the execution of the Work, an error appears in the positions, levels, dimensions or alignment of any part of the Works, the Contractor on being required to do so by the Engineer shall, at Contractor's cost, rectify such error to the satisfaction of the Engineer.

Site Data **4.9** The Employer shall have made available to the Contractor with the Tender documents such relevant data in Employer's possession on Geo technical data and sub-surface conditions. The accuracy or reliability of the data/studies/reports and of any other information supplied at any time by the Employer or Engineer is not warranted with respect to the viability of his Design and execution of Works and the Contractor shall be responsible for interpreting all such data any error, discrepancies. The Contractor shall conduct further investigations considered necessary by him at his own cost and any error, discrepancies if found in Employer's data at any stage will not constitute ground for any claim for extra time and costs.

The Contractor shall not be relieved from any risk or obligation imposed on or undertaken by him under the Contract on any such ground or on the ground that he did not or could not foresee any matter which may affect or have affected the execution of the Works, or compliance with his other obligations under the Contract.

The Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works.

The Contractor shall also be deemed to have inspected and examined the Site, its surroundings, the above data and other available information with respect to the viability of his Design and execution of Works and to have satisfied himself before submitting the Tender, as to all the relevant matters including without limitation:

(a) the form and nature of the Site, including the sub-surface conditions;
(b) the hydrological and climatic conditions;
(c) the extent and nature of the work, Plant, and Materials necessary for the execution and completion of the Works and the remedying of any defects;
(d) the applicable laws, procedures and labour practices
(e) The Contractor's requirement for access, accommodation, facilities, personnel, power, transport and other services.
(f) the risk of injury or damage to property adjacent to the Site and to the occupiers of such property or any other risk.

Sufficiency of accepted Contract Amount **4.10** The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Contract Price. Unless otherwise stated in the Contract, the Contract Price shall cover all his obligations under the Contract and all things necessary for the proper design, execution and completion of the Works, testing and commissioning and remedying of any defects.

Access Route **4.11** The Contractor shall be deemed to have satisfied himself as to the suitability and availability of the access routes he chooses to use. The Contractor shall (as between the Parties) be responsible for the maintenance of access routes. The Contractor shall provide at his cost signs or directions, which he may consider necessary or as instructed by Engineer for the guidance of his staff, labour and others. The Contractor shall obtain any permission concessions and related easement right that may be required from the relevant authorities for the use of such routes, signs and directions.

The Contractor shall select routes, choose and use vehicles so that movement of Contractor's Equipment, Plant and Materials from and to the Site is limited so that traffic is not delayed and damage to highways and bridges is prevented. If there is any delay or damage or injury, the cost of rectification or reconstruction of highways or bridges shall be borne by the Contractor. In case of claim arising of the execution of work from any aggrieved party, the Contractor shall immediately report the facts to the Engineer and negotiate a settlement. The Contractor shall indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any such matters.
The Employer will not be responsible for any claims which may arise from the use or otherwise of any access route. The Employer does not guarantee the suitability or availability of any particular access route, and will not entertain any claim for any non-suitability or non-availability for continuous use during construction of any such route.

Avoidance of Interference **4.11.1** All operations for the execution of the Works shall be carried out so as not to interfere unnecessarily with the convenience of the public or the access to public or private roads or footpaths or properties owned by the Employer or by any other person.

Rights of way and Facilities **4.12** The Employer will acquire and provide land for Permanent Works and right of way (within BMRCL's land) for access thereto over routes established by the Contractor. The Contractor shall bear all cost and charges for special or temporary rights of way which he may require including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facility outside the Site which he may require for the purpose of the Works. The Employer reserves the right to make use of these service roads/rights of way for itself or for other contractors working in the area, as and when necessary without any payment to the Contractor.

Programmes **4.13** The Contractor shall submit an Initial programme to the Engineer after receipt of the Letter of Acceptance but not later than 28 days from the date of receipt of Letter of Acceptance. The Contractor shall also submit a revised programme whenever the Engineer finds that the previous programme is inconsistent with actual progress.

Each programme shall include the following:

a) the order in which the Contractor proposes to carry out the Works (including each stage of Design, procurement, manufacture, delivery to Site, construction, erection, testing and commissioning),
b) all major events and activities in the progress of Construction or Manufacture /Documents; and
c) The sequence of all tests specified in the Contract and Commissioning.
d) Requirement of funds, month wise.

Unless otherwise stated in the Contract, the programmes shall be developed using precedence networking techniques, showing early start, late start, early finish and late finish dates.

No significant alteration to the programmes, or to such arrangements and methods, shall be made without obtaining consent of the Engineer. If the progress of the Works does not conform to the programmes, the Engineer may instruct the Contractor to revise the programmes, showing the modifications necessary to achieve completion within the Time period for Completion.

The Engineer shall inform the Contractor in writing within 21 days after receipt of the above information;

(a) That the programme has received his consent; or
(b) That the programme is rejected, in which case reasons for such rejection shall be given; or
(c) That further information is required to clarify or substantiate the programme or to satisfy the Engineer as to its reasonableness, or
(d) That the programme has received his consent subject to incorporation of comments attached to the Notice of No Objection. Provided that if none of the above actions is taken within a 30-day period, the Engineer shall be deemed to have given consent to the programme submitted.

The Contractor shall, within 21 days of receiving notification under sub-paragraphs (c) or (d) above, provide further information requested or the programme shall be deemed to have been rejected. The Engineer shall, within 21 days of receipt of such further information, either reject the programme or give his consent.

In the event of a programme being rejected, or deemed to have been rejected, the Contractor shall, within 21 days thereafter, submit a revised programme taking account of the reasons given for the rejection or incorporating further information requested by the Engineer, as the case may be.

The Contractor, following receipt of consent to the Works Programme, may at any time, submit to the Engineer an amended version. In the event that the Engineer grants an extension of time, instructs an Employer's Variation, or on the occurrence of any event or happening or situation, which could materially affect the progress of the Works, the Contractor shall submit a revised programme to the Engineer for his consent.

If the Engineer feels that there is a significant deviation between the actual or anticipated progress of the Works and the Works programme, the Engineer may require the Contractor to submit a revised/modified programme to ensure timely completion of Whole of Works or a Key Date. The Contractor shall submit such revised programme within 14 days of the Engineer's instruction or within such other time as the Engineer will allow in writing.

Unless and until an amended version has the consent of the Engineer, the existing programme shall remain as the Works Programme for all purposes of the Contract.

Consent by the Engineer to a Works Programme shall not relieve the Contractor of any of his duties or responsibilities under the Contract, nor in the event that a Works Programme indicates that a Key Date has not or will not be met, constitute any form of acknowledgement that the Contractor is or may be entitled to an extension of time in relation to such Key Date.

Progress Reports **4.14**

The Contractor shall submit to the Engineer by the end of each calendar month his Monthly Progress Report which shall, amongst other things, highlight actual or potential departures from the Works Programmes and/or the Design Submission Programme and state the measures which the Contractor proposes to take in order to make good or reduce any delay.

If requested by the Engineer, the Contractor shall submit to the Engineer, at weekly intervals, a written report as to the progress of off-Site manufacture of Plant, and Materials.

The Contractor shall also submit to the Engineer such other reports as may reasonably be required by him or any relevant authority or public body.
The progress reports shall conform to the Employer’s Requirements.

Contractor's Equipment **4.15**

4.15.1 The contractor shall have to arrange plant & equipment required for execution as stipulated in Employer Requirement & Technical Specifications, completion or maintenance of the works within the Scope of Work. The following conditions regarding use of equipment in works shall be satisfied:

The Contractor shall be required to give a trial run of the equipment on works intended to use, for establishing their capability to achieve the laid down / claimed specifications, tolerances and production output to the entire satisfaction of Engineer before commencement of work.

All plants / equipment deployed on the work shall be of proven efficiency and shall be operated and maintained at all times in a manner prescribed by the manufacturer and / or acceptable to the Engineer.

All plants / equipment to be deployed on the work shall carry designated authority certificate. Where not specified, it shall have third party safety certificate for the safe working of the equipment and shall be renewed after every 3 months. This certificate shall be produced to the Engineer as and when required.

All the construction plant shall be provided with the experienced operators having valid license issued by the competent authority.
Any material or equipment not meeting the approval of the Engineer shall be removed from the site immediately.

All Contractor's Equipment and Temporary Works provided by the Contractor shall, when brought on to the site, be deemed to be exclusively intended for execution of the Works and not be removed without the consent in writing of the Engineer. Such consent shall not be unreasonably withheld or delayed.

4.15.2 Upon completion of the Works the Contractor shall remove from the Site all the said Contractor's Equipment, Temporary works and his unused materials.

4.15.3 The Employer shall not at any time be liable for the loss or damage to any of the Contractor's Equipment, Temporary Works or materials save as mentioned in Clause 14.1

4.15.4 In respect of any Contractor's Equipment which the Contractor shall have imported for the purpose of the Works, the Employer may assist the Contractor, where required, in procuring any necessary Government consent for re-export of the same after the completion of the Works.

4.15.5 The Employer may assist (but is not obliged to) the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the Works.

Safety of Works **4.16** The Contractor shall throughout the execution of the Works including carrying out of any testing, commissioning or remedying of any defect:

a. takes full responsibility for the adequacy, stability, safety and security of the Works, Plant, Contractor's, Temporary Works, operations on Site and methods of manufacture, installation, construction and transportation;
b. have full regard for the safety of all persons on or in the vicinity of the Site (including without limitation persons to whom access to the Site has been allowed by the Contractor), comply with all relevant safety regulations, including provision of safety gear, and insofar as the Contractor is in occupation or otherwise is using areas of the Site, keep the Site and the Works (so far as the same are not completed and occupied by the Employer) in an orderly state appropriate to the avoidance of injury to all persons and shall keep the Employer indemnified against all injuries to such persons.

c. provides and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required by the Engineer or by laws or by any relevant authority for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the Site; and

d. where any work would otherwise be carried out in darkness, ensure that all parts of the Site where work is being carried out are so lighted as to ensure the safety of all persons on or in the vicinity of the Site and of such work.

4.16.1 Contractor is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Contractor's price shall be inclusive of all the necessary costs to meet the prescribed safety standards. In the case, the Contractor fails in the above; the Employer may provide the necessary arrangements and recover the costs from the Contractor.

4.16.2 Within stipulated time as mentioned in 'contract data', the Contractor shall submit a detailed and comprehensive contract-specific Site Safety Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual).

The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with this Sub-Clause.

The Contractor shall, from time to time and as necessary or required by the Engineer, produce supplements to the Site Safety Plan such that it is at all times a detailed, comprehensive and contemporaneous statement by the Contractor of his site safety and industrial health obligations, responsibilities, policies and procedures (under the laws of India) or as stated in the Contract or elsewhere relating to work on Site.

If at any time the Site Safety Plan is, in the opinion of the Engineer, insufficient or requires revision or modification to ensure the security of the Works and the safety of all workmen upon, and visitors to the Site, the Engineer may instruct the Contractor to revise the Site Safety Plan. The Contractor shall, within 14 days, submit the revised plan to the Engineer for review.

Any omission, inconsistency or error in the Site Safety Plan or the Engineer concurrence or rejection of the Site Safety Plan and/or supplements thereto shall be without prejudice to the Contractor's obligations with respect to site safety and industrial health and shall not excuse any failure by the Contractor to adopt proper and recognised safety practices throughout the execution of the Works.

The Contractor shall adhere to the Site Safety Plan and shall ensure that all sub-contractors of all tiers have a copy of the Site Safety Plan and comply with its provisions.

The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to carry out surveillance to verify that the Site Safety Plan is being properly and fully implemented.

The contractor shall have full regard for the safety of works (till it is handed over to the Employer), adjoining properties and all persons on/ or in the vicinity of the site (including without limiting to the persons to whom the access has been allowed by the contractor), existing utilities etc. and comply with all the relevant safety regulations as appropriate or as directed by Engineer.

He shall be responsible for accidents, injury, damage to properties, loss of life / time etc. whatsoever may be the cause in connection with or as a result of execution of the work until they are taken over by the Employer even though all reasonable and proper precautions may have taken by him. Such cost, loss or damage or compensation (including that payable under the provisions of Workmen's Compensation Act or any statutory amendment thereof) to any person or persons including third party sustaining damage as omission on part of the contractor is to be borne by the contractor and he shall keep the Employer / Engineer indemnified against the same.

The Contractor shall notify the Engineer immediately of any occurrence or incident that results in death or serious injury as defined in the Indian Penal Code. Such initial notification may be verbal and confirmed in writing thereafter and shall be followed by a comprehensive written report within 24 hours of the occurrence/incident. The Contractor shall duly complete standard forms as required by the Engineer and Statutory Authorities.

The Contractor shall provide and maintain all necessary temporary fire protection and firefighting facilities on the Site during the construction of the Works in accordance with the statutory regulations and as required by the Engineer. The Contractor shall ensure that all gases, fuels and other dangerous Materials and goods are stored and handled in a safe manner and in accordance with the statutory regulations and as required by the Engineer.

The obligations and requirements for safety and industrial health under this Contract are entirely without prejudice to, and do not derogate from, the Contractor's statutory obligations, with respect to safety and industrial health.

First aid Base

The Contractor shall provide a First Aid Base at his principal Works Area/ Construction Depot, suitable medical facilities for Workmen's Camps, suitable and sufficient first aid boxes at worksites for the Contractor's workforce and his Sub-contractors' workforce as further described in the Employer's Requirements.

Protection of the Environment **4.17**

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to avoid injury, damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that air emissions, surface discharges and effluent from the Site during the Contract Period shall not exceed the values indicated in the Employer's Requirements & Technical specifications, and shall not exceed the values prescribed by law. The Contractor shall conform to the Employer's Requirements & Technical specifications and shall indemnify the Employer against any liability or damages or claims arising out of his operations. The Contractor shall be responsible and liable for any stoppage, closure or suspension of the works due to any contravention of statutory requirements relating to the protection of the environment and shall indemnify and keep indemnified the Employer in this regard.

Outline Environmental Plan means the environmental plan forming part of the Tender, setting out, in summary form, the Contractor's proposed means of complying with his obligations in relation to environmental quality. Site Environmental Plan means the site environmental plan including all supplements thereto, or any amended or varied version thereof, as submitted by the Contractor in accordance with Employer's Safety, Health and Environmental Manual (SHE Manual), this Clause and which has received the Engineer's consent. The Site Environmental Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with this Clause. The Contractor is required to make himself aware of all the requirements of the Employer's SHE Manual in this regard and comply with them.

4.17.1 The Contractor's Site Environmental Plan shall be developed from his Employer's Safety. Health and Environmental Manual (SHE Manual), as per the Employer's Requirements.

Within stipulated time as mentioned in 'contract data', the Contractor shall submit a detailed and comprehensive Site Environmental Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual), and shall include such further material, which the Contractor considers necessary and relevant.

Upon the Engineer notifying his consent to the Site Environmental Plan, or any supplemental part thereof, the Contractor shall adhere to the principles and procedures contained in such document save to the extent that the Engineer may give his consent to any amended or varied version thereof.
The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to monitor and conduct tests to verify that the Site Environmental Plan is being properly and fully implemented.

Electricity, Water and Gas **4.18** The Contractor shall be responsible for making his own arrangements at his own cost to obtain supply of water, electricity or gas for the Works. The Employer where feasible may at his discretion assist the Contractor in giving recommendatory letters etc.

Tools, Plants And Equipment Supplied By The Employer **4.19** Except for any specific item mentioned in the Special Conditions of Contract or in Employer's Requirements, the Contractor shall provide all tools, plants and Equipment for the Works. In respect of such exceptional tools, plants or Equipment committed to be provided by the Employer under terms and conditions specified in the Special Conditions of Contract, the Contractor shall take all reasonable care and shall be responsible for all damages or loss caused by him, his representatives, sub-contractors or his workmen or others while they are in his charge.
No tools, plant and equipment shall be supplied by the Employer. Unless specifically incorporated in special conditions, the Contractor has to arrange all tools, plant, equipment required for the work.
On completion of the Works, the Contractor shall hand over the unused balance of the tools, plants and Equipment supplied by the Employer to the Employer back in good order and repair, fair wear and tear expected, and shall be responsible for any failure to account for the same or any damage done thereto.
The decision of the Engineer as to the amount recoverable from the Contractor on this account shall be final and binding.

Employer's Materials **4.20** Except for items mentioned in the Special Conditions of Contract, the Contractor shall provide all materials for the Works. Material if any, to be provided by Employer will be done only in a phased manner as per pre-approved program, against a Bank Guarantee (in 'Physical form' or 'e- Bank Guarantee') for the value of the Material and at terms and conditions for issue, upkeep, usage, return and recovery of such Materials as specified in Special Conditions of Contract.

Sheds, Stores, Yards **4.21** It shall be the responsibility of the Contractor to provide at his own expense the required sheds, store houses, and yards for both Permanent and Temporary Works and provide free access to the Engineer and the Engineer's Representative who will have right of inspection including that of instructing the Contractor to remove a particular material from the stores and not to use the same on the Works.

Temporary Works **4.22** The Contractor's proposals for erection of all ancillary and temporary works shall be in conformity with the proposals submitted along with the Tender and modifications thereto as approved by Engineer.

The Contractor shall submit drawings, supporting design calculations of Temporary works, where called for by the Engineer and other relevant details of all such works to the Engineer for approval at least one month before he desires to commence such works. Approval by the Engineer of any such proposal shall not relieve the Contractor of his responsibility for sufficiency of such works.

All temporary works necessary for the proper execution of the Works shall be provided and maintained by the Contractor at his cost (unless otherwise provided in tender document) and subject to the consent of the Engineer shall be removed by Contractor at his own expense when they are no longer required and in such manner as the Engineer shall direct. In case the Contractor fails to remove the temporary works on completion the Engineer is authorized to get the same removed and recover the cost thereof from the Contractor.

Unforeseeable Physical Conditions **4.23**

In this Clause "physical conditions" means natural physical conditions, which the Contractor encounters at Site while executing the Works excluding climatic conditions.

If, during the execution of the Works, the Contractor shall encounter physical conditions, which, in his opinion, could not have been reasonably foreseen by an experienced Contractor, the Contractor shall forthwith give written notice thereof to the Engineer and if, in the opinion of the Engineer, such conditions could not have been reasonably foreseen by an experienced Contractor, then the Engineer shall certify and the Employer shall pay reasonable additional cost to which the Contractor shall have been put by reason of such conditions in the following cases:

a. for complying with any instruction which the Engineer may issue to the Contractor in connection therewith, and
b. for any proper and reasonable measures approved by the Engineer which the Contractor may take in the absence of specific instructions from the Engineer, as a result of such conditions or obstructions being encountered.

The decision of the Engineer as to the additional cost shall be final and binding.

Access for Engineer **4.24**

The Contractor shall allow at all times the Engineer or the Engineer's assistant or any other person authorised by the Engineer access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured, fabricated and/or assembled for the Works. The Contractor shall ensure that sub contracts if any shall contain provisions entitling the Engineer or any person authorised by him to have such access.

Access Road and Way Leaves **4.25**

Providing access roads/ way leaves to the site will be Contractor's responsibility. The Contractor shall pay the statutory vehicle license and permit fees for use of public roads. The Contractor's heavy construction or tracked equipment shall not travel on any public road or bridge, unless the Contractor has made arrangements with the authority concerned and has obtained the approval of the Engineer to such arrangements.

The Contractor shall repair any damage to the road or bear the cost thereof due to movement of contractor's plants and equipment, vehicles etc. to the specifications and satisfaction of road authorities as well as of Engineer.
The Contractor shall plan transportation of construction materials to work site in accordance with traffic regulations enforced by local traffic authorities from time to time and in such a way that congestion on the roads and road accidents are avoided. The Contractor should study this aspect thoroughly before quoting for the work.

Contractor to keep Site Clear **4.26**

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.
On completion of the works, the Contractor shall clear away and remove from site all Constructional Plant, surplus material and Temporary Works. He should leave the whole of the site and Works in a clean, tidy and workman like condition to the satisfaction of the Engineer.

On completion of Work the Contractor shall also clear away the labour camps, hutments and other related installations and restore the land to its original condition to the satisfaction of the Engineer within 45 days of the physical completion of Work. The cost on account of delay in return of land and reinstatement of original condition within the stipulated time as determined by Engineer will be recovered from the Contractor's dues.

All garbage shall be removed from site daily or as they accumulate. All surface and sub-soil drains shall be maintained in a clean, sound and satisfactory state of performance. No extra payment shall be made on this account.

No final payment in settlement of the accounts for Works shall be made till, in addition to any other condition necessary for such final payment, site clearance and clearances of labour camps etc. shall have been effected by him. Such clearance may be made by the Engineer through any other agency at the expense of the Contractor in the event of the Contractor's failure to comply with this provision within 7 days after receiving notice to that effect from the Engineer. All expenses on such removal / clearance shall be debitable to the Contractor as loans due from the Contractor to the Employer, and the Employer shall be competent to recover the same from Contractor's on-account or final bills, or from Performance Security amount or from any other amount payable to the Contractor in any other Contract**.**

Security of the Site **4.27**

The Contractor shall take all measures necessary to ensure security, including exercising control over all persons and vehicles which are employed or engaged on the Site or in connection with the Works or the other works comprising the Project and with the security arrangements applicable to any other site within the Project.

The Contractor shall arrange the issue of passes for the admission of all persons and vehicles to the Site or to any part thereof and may refuse admission to or remove from the Site any person or vehicle failing to show an appropriate pass on demand to any duly authorized person.

If required by the Engineer, the Contractor shall submit a list identifying all persons to whom passes have been issued together with two photographs of each person and all entities to which a pass has been issued in respect of any vehicle and shall satisfy the Engineer of the bonafides of any such person or entity.

The Contractor shall not, without the written permission of the Engineer or otherwise in accordance with the Contract, allow access to the Site to any person unless the presence on Site of such person is necessary in connection with the execution of the Works or with the discharge of the duties of any relevant authority.

The Contractor shall be wholly responsible for security of site and Works. The Contractor shall follow relevant Safety and Security instructions issued by the concerned Authorities from time to time and shall work in close coordination with the concerned Authorities.

Contractor's Operations on Site **4.28**

The Contractor shall confine his operations to the Site, and to any additional area which may be provided to the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep his personnel and equipment within the Site and such additional areas, and to keep and prohibit them from encroaching on adjacent land.

The Contractor, after obtaining any necessary consent from any relevant authority, shall submit to the Engineer proposals showing the layout of pedestrian routes, lighting, signs, and guarding any road opening or traffic diversion which may be required in connection with the execution of the Works and which the Contractor intends to construct. Any consent given by the Engineer to such proposals shall not relieve the Contractor of any obligation under the Contract or absolve the Contractor from any liability for or arising from such proposals or the implementation thereof.

All lights provided by the Contractor shall be so placed or screened as not to interfere with signs, signals or lights. The Contractor shall not in any way obscure or affect signs, signals or lights, in use by any relevant authority. In the event that the Contractor does so, the Contractor shall pay all costs associated with the re-fitting, re-instating or provision of alternatives for any sign, signal or light, obscured or affected.

For the purposes of this Clause only, "Site" shall include off-Site places of manufacture or storage and the Contractor's Work Areas and shall include, areas provided to the Contractor by others.

Discoveries of Archaeological and Geological value. **4.29**

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest, in addition to oil and other minerals discovered on the Site shall be the absolute property of the Government of India and the Contractor shall take all the necessary precautions to prevent its workmen or its sub-contractors' workmen or any other person from removing or damaging any such article or thing and shall immediately upon discovery thereof, acquaint the Engineer of such discovery and carry out the instructions of the Engineer.

Publicity **4. 30**

The Contractor shall not publish or otherwise circulate alone or in conjunction with any other person, any articles, photographs or other materials relating to the Contract, the Site, the Works, the Project or any part thereof, nor impart to the press, or any radio or television network any information relating thereto, nor allow any representative of the media access to the Site, Contractor's Works Areas, or off-Site place of manufacture, or storage except with the permission, in writing, of the Employer. The Contractor shall ensure that his sub-contractors of any tier shall be bound by a like obligation and shall, if so required by the Employer, enforce the same at his own expense. The provisions of this Sub-Clause shall not exempt the Contractor from complying with any statutory provision in regard to the taking and publication of photographs.

Disclosure of Relationship **4.31**

If the Contractor or any partner of the Contractor or Director of the Contractor’s company is closely related to any of the Officers of the Employer or the Engineer, or alternatively, if any close relative of an officer of the Employer or the Engineer has financial interest / stake in the Contractor’s firm, the same shall be disclosed by the Contractor at the time of filing his tender. Any failure to disclose the interest involved, shall entitle the Employer to rescind the Contract, without payment of any compensation to the Contractor**.** The Contractor shall note that he is prohibited from developing such interest during the Contract period.

Use of Explosives **4.32** Explosives if required on the Work shall be used by Contractor only with prior Approval of the Engineer and in the manner and to the extent permitted by him. The explosives shall be handled, stored in a special magazine to be provided at the cost of the Contractor and used under the strict supervision of persons licensed for this purpose under the requisite statutory rules and regulations. The Contractor shall take all precautions in transporting and using the explosives and avoid damage to nearby structures and utilities. The Contractor shall be responsible for taking all the precautions in the usage of the explosives at Contractor's cost, sole risk and responsibility. The Contractor shall hold the Employer harmless and indemnify for the above.

Prohibited conduct **4.33**

4.33.1 The Employer requires that the Tenderers/Contractors observe the highest standards of ethics during Tendering and execution of this Contract and should not indulge in Prohibited conduct which includes 'corrupt practice' and 'fraudulent practice' defined as follows;

(i) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to Employer, Engineer or any of their employees, influence in the procurement process or during Contract execution; and
(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or during the execution of a Contract to the detriment of the Employer, and includes collusive practice among Tenderers (prior to or after tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

In pursuance with this policy, the Employer:

a. Will reject the Tender for the Work or rescind the Contract, if the Employer determines that the Tenderer/Contractor has engaged in corrupt or fraudulent practices, and
b. Will declare a Tenderer/Contractor ineligible, either indefinitely or for a minimum period of 2 years from the date of identification of such prohibited conduct, to be awarded a Contract/s if he at any time determines that the Contractor has engaged in corrupt or fraudulent practices in competing for, or in executing the Contract.

Compensation to Contractor on rescission of Contract under this clause **4.33.2** In the event of rescission of Contract under Sub-clause 4.33.1, the Contractor shall not be entitled to any compensation whatsoever, except for the work done up to the date of rescission.

Quality Assurance **4.34** Unless otherwise stated in Special Conditions of Contract and/or Employer's Requirement, the Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. Such system shall be in accordance with the details stated in the Contract. Compliance with the quality assurance system shall not relieve the Contractor of his duties, obligations or responsibilities.

Details of all procedure and compliance documents shall be submitted to the Engineer for his consent before each execution stage is commenced.

Confidentiality of Information **4.35** The Contractor shall not use or divulge, except for the purpose of the Contract or with the written permission of the Employer, any information relating to the Works or the Project provided in the Contract or otherwise provided by the Employer, or the Engineer. The Contractor shall ensure that his sub-contractors of any tier shall be bound by a like confidentiality undertaking.

The Employer and the Engineer and any third party to whom an assignment has been made in accordance with Sub-clause 2.4 may use any information provided by the Contractor in accordance with the Contract. The Employer shall use reasonable endeavors to ensure that the Engineer and any third party-referred to in aforesaid Sub-Clause 2.4 shall not, divulge such information except for any purpose connected with the Contract.

5 Design

This clause under the head design are applicable only in "Design & build" contracts and in case of "Part Design & Build" Contracts, these are applicable only to the part of the contract in which the design is the responsibility of the contractor.

General Obligations **5.1**

The Contractor shall design and provide all necessary specifications for the Works in accordance with the site plans and Employer's requirements. Any design detail, plan, drawing, specifications, notes, annotations, and information required shall be provided in such sufficient format, details, extent, size and scale and within such time as may be required to ensure effective execution of Works and/or as otherwise required by the Engineer.
The Contractor holds himself, and his designers as having the experience and capability necessary for the design. The Contractor undertakes that the designers shall be available to attend discussions with the Engineer at all reasonable times during the Contract Period.
The Contractor shall furnish Designer's Warranty in the format given in contract forms.

Contractor's warranty of Design **5.2**

a) The Contractor shall be fully responsible, for the suitability, adequacy, integrity, durability and practicality of the Contractor's proposal.
b) The Contractor warrants that the Contractor's Proposals meet the Employer's Requirements and is fit for the purpose thereof. Where there is any inadequacy, insufficiency, impracticality or unsuitability in or of the Employer's Requirements or any part thereof, the Contractor's Proposal shall take into account, address or rectify such inadequacy, insufficiency, impracticality or unsuitability at Contractor's own cost.
c) The Contractor warrants that the Works have been or will be designed, manufactured, installed and otherwise constructed and to the highest standards available using proven up-to-date good practice
d) The Contractor warrants that the Works will, when completed, comply with enactments and regulations relevant to the Works
e) The Contractor warrants that the design of the Works and the manufacture of plant have taken or will have taken full account of the effects of the intended manufacturing and installation methods, Temporary Works and Contractor's Equipment
f) The Contractor shall also provide a guarantee from the Designer for the design for suitability, adequacy, practicality of design for Employer's Requirements
g) The Contractor shall indemnify the Employer against any damage, expense, liability, loss or claim, which the Employer might incur, sustain or be subject to arising from any breach of the Contractor's design responsibility and/or warranty set out in this Clause.
h) The Contractor further specifies and is deemed to have checked and accepted full responsibility for the Contractor's Proposal and warrants absolutely that the same meets the Employer's Requirements:

i Notwithstanding that such design may be or have been prepared, developed or issued by the Employer, any of the Contractor's consultants, his sub-contractors and/or his qualified personnel/persons or cause to be prepared, developed or issued by others.

ii. Notwithstanding any warranties, guaranties and/or indemnities that may be or may have been submitted by any other person.
iii. Notwithstanding that the same have been accepted by the Engineer.

The Contractor shall be fully responsible for the Plants, Materials, goods, workmanship, preparing, developing and coordinating all design Works to enable that part of the Works to be constructed and/or to be fully operational in accordance with the Contract's requirements.

Apart from the Contractor, the above warranty shall also be applicable for his designer. This warranty shall be a part of his sub contract with the designer and should be made available at the time of signing of the Agreement.

No claim for additional payment or extension of time shall be entertained and/or the Contractor shall not be relieved from any obligation/liability under the Contract, for any delay, suspension, impediment to or adverse effect upon the progress of the Works due to any mistake, inaccuracy, discrepancy or omission in or between the Contractor's, the Definitive Design and the final design, or any failure by the Contractor to prepare any Design Data or submit the same to the Engineer in due time and the Contractor shall promptly make good any such defect at his own cost.

Construction and/or Manufacture Documents **5.3**

The Manufacture Documents shall comprise the technical documents specified in the Employer's Requirements, documents required to satisfy all regulatory approvals, documents described in Sub Clause 5.6 (As Built Document). The Contractor shall prepare all Manufacture Documents in sufficient detail and shall also prepare any other document necessary to instruct the Contractor's personnel. The Engineer shall have the right to inspect the preparation of all these documents wherever they are being prepared.

Each of the Construction and/or Manufacture Documents shall, when considered ready for use, be submitted to the Engineer for pre-construction or pre-manufacture review. This submittal shall be made sufficiently before the Works are to be carried out to give the Engineer and the Employer reasonable time to examine the drawings or other documents, to prepare comments and for any changes to be accommodated by the Contractor. Unless otherwise stated in Employer's Requirements, each review by the Engineer shall not exceed 21 days, calculated from the date on which the Engineer receives the Manufacture Document.
The Engineer may during the review period, give notice to the Contractor that a Manufacture Document fails (to the extent stated) to comply with the Employer's Requirements, it shall be rectified, resubmitted and reviewed (and if specified, approved) in accordance with this Sub-Clause, at the Contractor's cost.
For each part of the Works, and except to the extent that the prior consent of the Engineer shall have been obtained:

(a) In the case of a Construction and/or Manufacture Document which has (as specified) been submitted for the Engineer's approval
(i) The Engineer shall give notice to the Contractor that the Construction and/or Manufacture Document is provided with no objection, with or without comments, or that it fails (to the extent stated) to comply with the Contract
(ii) Execution of such part of the Works shall not commence until the Engineer has provided with no objection the Construction and/or Manufacture Document; and
(iii) The Engineer shall be deemed to have provided with no objection to the Construction and/or Manufacture Document upon the expiry of the review periods for all the Construction and/or Manufacture Documents which are relevant to the Design and execution of such parts, unless the Engineer has previously notified otherwise in accordance with sub-paragraph (i)

(b) construction and/or manufacture of such part of the Works shall not commence prior to the expiry of the review of the Construction and/or Manufacture Documents which are relevant to its Design and execution;
(c) construction and/or manufacture shall be in accordance with such reviewed (and if specified, approved) Construction and/or Manufacture Documents; and
(d) if the Contractor wishes to modify any Design or document which has previously been submitted for such pre-construction and/or pre- manufacture review, the Contractor shall immediately notify the Engineer, and based on Engineer's approval shall subsequently submit revised documents to the Engineer in accordance with the above procedure.

Within 14 days of notification of the Engineer's consent the Contractor shall provide the Engineer with the type and number of sets of the relevant drawings or documents as stipulated in the Employer's Requirement.

Should it be found at any time after notification of consent that the relevant drawings or documents do not comply with the Contract or do not agree with drawings or documents in relation to which the Engineer has previously notified his consent, the Contractor shall, at his own expense, make such alterations or additions as, in the opinion of the Engineer, are necessary to remedy such non-compliance or non-agreement and shall submit all such varied or amended drawings or documents for the consent of the Engineer.

If the Engineer instructs that further Construction and/or Manufacture Documents are necessary for carrying out the Works, the Contractor shall promptly and at Contractor's cost prepare such documents,

The Contractor shall submit complete documents and information pertaining to the methods of manufacture, installation and construction which the Contractor proposes to adopt or use, (and if applicable such calculations of stresses, strains and deflections and the like that will or may arise in the Works or to the other works comprising the Project or any parts thereof during installation from the use of such methods). The Engineer will then check to see whether, if such methods are adhered to, the Works can be executed in accordance with the Contract and without detriment to the Works (when completed) and to other works comprising the Project and in a manner which minimises disruption to road and pedestrian traffic.
The Engineer shall inform the Contractor in writing within 21 days after receipt of the above information;
(a) That the Contractor's proposed methods of manufacture, installation and construction have the consent of the Engineer; or
(b) In what respects, in the opinion of the Engineer the Contractor's proposed methods of manufacture, installation and construction:
(i) fail to comply with the Employer's Requirements and/or the Definitive Design and/or the Final Design;
(ii) would be detrimental to the Works and/or to the other works comprising the Project;
(iii) do not comply with the other requirements of the Contract; or
(c) as to the further documents or information which are required to enable the Engineer to properly assess the proposed methods of manufacture, installation and construction.

In the event that the Engineer does not give his consent, the Contractor shall take such steps or make such changes in the said methods or supply such further documents or information as may be necessary to meet the Engineer's requirements and to obtain his consent. The Contractor shall not change the methods of manufacture, installation and construction which have received the Engineer's consent without further review and consent in writing of the Engineer.

Notwithstanding the foregoing provisions of this Clause, or that certain of the Contractor's proposed methods of manufacture, installation and construction may be the subject of the consent of the Engineer, the Contractor shall not be relieved of any liability or obligation under the Contract.

No examination by the Engineer of the drawings or documents submitted by the Contractor, nor any consent of the Engineer in relation to the same, with or without amendment, shall absolve the Contractor from any of his obligations under the Contract or any liability for or arising from such drawings or documents.

Errors omissions, ambiguities, inconsistencies, inadequacies and other defects if found at any stage in construction or any operations manufacture documents, then shall be rectified by the Contractor at his own cost and any approval or consent or review (under this sub-clause or otherwise) by the Employer/Engineer of the Manufacture and Construction Documents under this Sub-clause shall not relieve the Contractor from any obligations or responsibility under the Contract.

The Operation and Maintenance Manuals and drawings submitted by the Contractor shall, if required, be updated by him during the Defects Liability Period and re-submitted for review by the Engineer.
In the case of submissions subsequent to the Definitive Design, the Design Data shall be in accordance with Employer's Requirements.
The Contractor shall submit to the Engineer all Design Data, together with the relevant Design Certificates certified by the Contractor, on or before the respective dates for submission shown on the Design Submission Programme or, as the case may be, the Works Programme. In the event that a re-submission of Design Data is required, such re-submission shall be made as soon as practicable after the receipt of the relevant statement of objections. All submissions of Design Data shall include the copies as stipulated in the Employer's Requirements.
Following receipt of a submission of Design Data the Engineer shall, within 28 days, return one copy of the Design Data to the Contractor, together with either a Notice of No Objection, or a statement of objections which shall identify the aspects of the Design Data which do not conform to the above requirements. If the Engineer returns any Design Data with a Notice of No Objection, the Contractor shall proceed with the Works in accordance with the Contract.
If the Engineer provides that revisions to a submission of Design Data are appropriate but that such revisions are of minor design significance, the Engineer may issue a Notice of No Objection subject to an appended schedule of comments identifying the relevant revisions. The Contractor shall revise such Design Data in accordance with such comments but shall not be obliged to re-submit such Design Data solely on account of such revisions.
If the Engineer returns any Design Data with a statement of objections the Contractor shall revise the Design Data to take account of the stated objections and re-submit such Design Data to the Engineer, together with new Design Certificates signed by the Designer and the Contractor.
The issue of a Notice of No Objection in relation to any submission of Design Data shall be entirely without prejudice to the review of subsequent submissions of Design Data or to any subsequent request for a Contractor's Variation, and shall not bind or fetter the Engineer in any manner whatsoever when deciding whether or not to raise objections in relation to any subsequent submission of Design Data or when dealing with a subsequent request for a Contractor's Variation.
Neither an objection raised to the Design Data nor revisions of minor design significance under this Clause will, under any circumstances, constitute an Employer's Variation

Technical Standards and Regulations **5.4**

The Design, the Construction and/or Manufacture Documents, the execution and the completed Works (including remedying of defects therein) shall comply with the specifications, technical standards, building construction, safety and environmental regulations and other standards specified in the Employer's Requirements applicable to the Works or defined by the applicable laws and regulations.

Samples **5.5**

The Contractor shall submit at his own cost the following samples and relevant information to the Engineer for pre-construction and/or pre-manufacture review in accordance with the procedure for Construction and/or Manufacture Documents described in Sub-Clause 5.3:

a manufacturer's standard samples of Materials,

b samples (if any) specified in the Employer's Requirements

Each sample shall be labelled as to origin and intended use in the Works.

As-Built Drawings and Documents **5.6**

The Contractor shall prepare, and keep up-to-date, a complete set of "as-built" records of the execution of the Works, showing the exact "as-built" locations, sizes and details of the Works as executed, with cross references to relevant specifications and data sheets. These records shall be kept on the Site and shall be used exclusively for the purposes of this Sub-Clause. Four copies shall be submitted to the Engineer prior to the commencement of the Tests on Completion.

In addition, the Contractor shall prepare and submit to the Engineer "as-built drawings" of the Works, showing all Works as executed. The drawings shall be prepared as the Works proceed, and shall be submitted to the Engineer for his inspection. The Contractor shall obtain the consent of the Engineer as to their size, the referencing system, and other pertinent details.

Prior to the issue of any Taking Over Certificate, the Contractor shall submit to the Engineer As-Built Drawings, endorsed by the Contractor to the Engineer for a Notice of No Objection in 4 sets of hard copy preferably in A3 size and also in electronic format using a commercially available CAD program and any further Construction and/or Manufacture Documents specified in the Employer's Requirements.

Operation and Maintenance Manuals **5.7**

Prior to commencement of test on completion, the contractor shall prepare and submit to the Engineer, operation and maintenance manual in accordance with the Employer's Requirements and in sufficient details for the Employer to operate, maintain, dismantle reassemble, adjust and repair the works. The works shall not be considered to be completed for the purpose of taking over certificate under sub clause 9.1 until such operation and maintenance manual have been submitted to the Engineer and received his consent.

Intellectual Property Rights and Royalties **5.8**

The Contractor shall indemnify the Employer and the Engineer from and against all claims and proceedings on account of infringement (or alleged infringement) of any patent rights, registered designs, copyright, design, trademark, trade name, know-how or other intellectual property rights in respect of the Works, the Contractor's Equipment, machines, work method, or Plant, or Materials, or anything whatsoever required for the Works and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. The Contractor shall pay all traffic surcharges and other royalties, licence fees, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials, machine, process, systems, work methods, or the Contractor's Equipment required for the Works. The Contractor shall, in the event of infringement of Intellectual Property Rights, rectify, modify or replace at his own cost the Works, Plant or materials or anything whatsoever required for the Works so that infringement no more exist or in the alternative shall procure necessary rights/license so that there is no infringement of Intellectual Property Rights.

The Contractor shall be promptly notified of any claim under this Sub- Clause made against the Employer. The Contractor shall, at his cost, conduct negotiations for the settlement of such claim, and any litigation that may arise from it. The Employer or the Engineer shall not make any admission which might be prejudicial to the Contractor, unless the Contractor has failed to take over the conduct of the negotiations, litigation within a reasonable time after having been so requested. In the event of the Contractor failing to act at the Engineer's notice, the Employer shall be at full liberty to deduct any such amount of pending claim from any amount due to the Contractor under this Contract or any other Contract.

Insofar as the patent, copyright or other intellectual property rights in any Plant, Design Data, plans, calculations, drawings, documents, Materials, know-how and information relating to the Works shall be vested in the Contractor, the Contractor shall grant to the Employer, his successors and assignees a royalty-free, non-exclusive and irrevocable licence to use and reproduce any of the works, designs or inventions incorporated and referred to in such Plant, documents or Materials and any such know-how and information for all purposes relating to the Works (including without limitation the design, manufacture, installation, reconstruction, Testing, commissioning, completion, reinstatement, extension, repair and operation of the Works) for the Employer's own use.
If any patent, registered design or software is developed by the Contractor specifically for the Works, the title thereto shall vest in the Employer and the Contractor shall grant to the Employer a non-exclusive irrevocable and royalty-free licence to use, repair, copy, modify, enhance, adapt and translate in any form such Software for Employer's own use.

If the Contractor uses proprietary software for the purpose of storing or utilising records the Contractor shall obtain at his own expense the grant of a licence or sub-licence to use such software in favour of the Employer and shall pay such licence fee or other payment as the grantor of such licence may require provided that the use of such software under the licence may be restricted to use relating to the Design, construction, reconstruction, manufacture, completion, reinstatement, extension, repair and operation of the Works or any part thereof.

The Contractor's permission referred to above shall be given, inter alia, to enable the Employer to disclose (under conditions of confidentiality satisfactory to the Contractor) programmes and documentation for a third party to undertake the performance of services for the Employer in respect of such programmes and documentation.

If any software is developed under the Contract or used by the Contractor for the purposes of storing or utilising records over which the Contractor or a third party holds title or other rights, the Contractor shall permit or obtain for the Employer (as the case may require) the right to use and apply that Software free of additional charge (together with any modifications, improvements and developments thereof) for the purpose of the design, manufacture, installation, reconstruction, testing, commissioning, completion, reinstatement, extension, repair, modification or operation of the Works, or any part thereof, or for the purpose of any Dispute.

The Employer reserves the right to use other Software on or in connection with the Works.

6 Staff and Labour

Engagement of Staff and Labour **6.1**

The Contractor shall make his own arrangements for the engagement of staff and labour at his own cost. The Contractor shall, if required by the Employer, deliver to the Engineer or to his office, a return in detail, in such form and at such intervals as the Employer may prescribe, showing the number of labour employed in different categories by the Contractor on the Site.

Rates of Wages and Conditions of Labour **6.2**

Full compliance of statutory requirements apart, the Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or the industry where the work is carried out.

The Contractor shall make himself aware of all labour regulations and their impact on the cost and build up the same in the Contract Price. During the Contract Period no extra amount in this regard shall be payable to the Contractor, for whatsoever reason including any revision of rates payable to the labour due to revision of rates payable in Minimum Wages Act.

Labour provided by the Contractor, either directly or through sub-contractors, for the exclusive use of the Employer or the Engineer, shall, for the purpose of this Sub-Clause, be deemed to be employed by the Contractor.

In the event of default being made in the payment of any money in respect of wages of any person employed by the Contractor or any of its sub-contractors of any tier in and for carrying out of this Contract and if a claim there of is filed in the office of the Labour Authorities and proof thereof is furnished to the satisfaction of the Labour Authorities, the Employer may, failing payment of the said money by the Contractor, make payment of such claim on behalf of the Contractor to the said Labour Authorities and any sums so paid shall be recoverable by the Employer from the Contractor.

Persons in the service/ retired of Employer/ Engineer **6.3**

a) The Contractor shall not recruit or attempt to recruit staff and labour from amongst the Employer and the Engineer's personnel during the Contract period.
b) The Contractor either at the tendering stage or during construction stage will not employ any retired employee of Employer or Engineer of the Employer in any capacity unless such employee has completed at least two years post retirement period or has obtained the no-objection certificate from Employer for being employed with the Contractor. It will be responsibility of the Contractor to collect the Employer's no objection certification from such retired employee and submit the same back to the Employer.

In case of non-compliance of above, in addition to any or several of the courses, referred in Sub-clauses 13.2.1 and 13.2.2being adopted by the Employer the Contractor on Termination of the Contract for the aforesaid reasons will have no claim whatsoever against the Employer except for actual value of the Work executed till the time of Termination**.**

Labour Laws **6.4**

In dealing with labour and employees, the Contractor and his Sub-Contractors (including piece rate and petty Contractors) shall comply fully with all laws and statutory regulations pertaining to engagement, payment and upkeep of the labour in India.

Working Hours **6.5**

The Contractor, generally will have to carry out work during night hours also and in shifts unless specifically provided otherwise in the Contract. No increase in rates or extra payments shall be admissible for night work. Wherever night working is carried out by Contractor, temporary lighting arrangements as per approved layout shall be provided, installed, maintained for the duration of the contract and removed after completion of work. Flashing lights to warn the traffic on roads shall be used at all times on all obstructions. No extra payment will be made for the provision of temporary lighting, flashing lights and for maintenance. It is to be noted that the works are being undertaken in an urban area.

Should there be complaints received by members of the public regarding excessive noise or vibration, etc. especially at night, and if such complaints are valid, then the contractor shall take remedial measures to prevent such nuisance. No extra payment will be made to the contractor for the provision of such measures.

Working hours during the Defect liability period will be curtailed when certain system become operational.

Facilities for Staff and Labour **6.6**

The Contractor shall provide and maintain at his expense, all necessary accommodation and welfare facilities as per prevailing labour & welfare laws for his (and his Sub- contractor's) staff and labour. All accommodation shall be maintained in a clean and sanitary condition, by the Contractor at his cost.

No staff and labor housing facilities will be allowed at the Site. The Contractor will have to make his own arrangement for the same at his own cost.

Health and Safety **6.7**

Precaution shall be taken by the Contractor to ensure the health and safety of his staff and labour. The Contractor shall, in collaboration with and to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as per the Engineer's requirement and will ensure complete compliance with relevant clauses of Employer's Health, Safety and Environment Manual (SHE Manual).
The Contractor's Site Safety Plan shall be developed from his Outline Safety Plan as per Employer's Requirements and SHE Manual of the Employer.
The Contractor shall appoint a member of his staff at the Site to be responsible for maintaining the safety, and protection against accidents, of personnel on the Site. This person shall be qualified for his work and shall have the authority to issue instructions and take protective measures to prevent accidents.

Contractor's Superintendence **6.8**

The Contractor shall provide all necessary superintendence during the Design and execution of the Works, and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. Such superintendence shall be provided by sufficient persons having adequate knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) for the satisfactory and safe execution of the Works.

Contractor's Personnel **6.9**

The Contractor shall employ (or cause to be employed) only persons who are careful and appropriately qualified, skilled and experienced in their respective trades or occupations. The contractor shall also deploy Key Personnel as stipulated in Employer's Requirements. Penalty will be levied for non-deployment of Key personnel as stated in contract data. The Engineer may advise or enforce the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative, who in the opinion of the Engineer:

a. persists in any misconduct,
b. is incompetent or negligent in the performance of his duties,
c. fails to conform with any provisions of the Contract, or
d. persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

Preservation of Peace and orderly conduct. **6.10**

The Contractor shall be responsible for preservation of peace and orderly conduct at the site and its neighbourhood by Contractor's employees, Representatives, petty contractors, Sub Contractors etc. In case, deployment of a Special Police Force becomes necessary at or near Site, during the tenure of Works, the expenses for the same shall be borne by the Contractor.

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour, and to preserve peace and protection of persons and property in the neighbourhood of the Works against such conduct.

Labour to be Contractor's Employee **6.11**

If, the Contractor directly or through petty contractors or Sub-Contractors supplies any labour to be used wholly or partly under the direct orders and control of the Engineer or the Employer, whether in connection with any work being executed by the Contractor or otherwise for the purposes of the Employer, such labour shall, for the purpose of this clause, be deemed to be persons employed by the Contractor.

Report of Accidents To Labour **6.12**

The Contractor shall be responsible for safety of all employees, employed by him on Works, directly or through petty contractors or Sub-Contractors, and shall report accidents to any of them, however, and wherever occurring on Works, to the Engineer and shall make every arrangement to render all possible assistance and to provide prompt and proper medical attention. The compensation for affected Workers or their relatives shall be paid by the Contractor in such cases with utmost expeditious in accordance with the Workmen's Compensation Act.

Claim on account of violation of Labour laws **6.13**

The Contractor shall be solely accountable for violation of any labour law by it, its petty contractors or Sub Contractors and will pay any such claim/damage to the authorities forthwith on demand. If any amount shall, as a result of any instructions, directions or decisions from the Authorities or claim or application made under any of the labour laws or regulations, be directed to be paid by the Employer, such amount shall be deemed to be amount payable to the Employer by the Contractor and he will pay the same to the Employer forthwith on demand, without demur and without asking for any reasons/explanations from the Employer. On failure of the Contractor to repay the Employer any amount paid or to be paid by it as aforesaid within seven days after the same shall have been demanded, the Employer shall be entitled to recover the amount from any amount due or accruing to the Contractor under this or any other Contract with the Employer.

Maintenance of Records **6.14** The contractor shall maintain all record pertaining to labour as mandated by the law of the land and also keep it preserved at least for three years after the completion of the project

7 Quality Control

Proposed Site Quality Plan and Manner of Execution **7.1** Within 30 days of the issue of the Letter of acceptance, the Contractor shall submit to the Engineer, for his consent, his proposed Site Quality Plan based on the Outline Quality Plan and the Employer's Requirements. The quality manual should address the quality system as required by ISO 9001-1991. Any supplement to the Site Quality Plan shall be submitted at least 14 days before commencement of the relevant work.

Upon the Engineer notifying his consent to the Site Quality Plan, or any supplement thereto, the Contractor shall, adhere to the principles and procedures contained in such document, except where the Engineer gives his consent to any amended or varied version thereof. The Contractor shall cause any sub-contractors to adhere to this Plan.

The Contractor shall appoint a suitably qualified and experienced person, not otherwise engaged in the performance of the Contract, to act as manager of the quality assurance system and shall provide such other personnel and resources as required to ensure effective operation of the quality assurance system. The said manager shall carry out audits of the application of the quality assurance system, and ensure effective quality control and delivery of quality assurance.

The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out surveillance visits both on and off the Site to verify that the quality assurance system is being properly and fully implemented. No extra payment shall be made in this regard and the cost of the Work under this element shall be deemed to be included in the Contract Price.

All Plant and Materials to be supplied shall be manufactured, and all work to be done shall be executed, in the manner prescribed in the Contract. Where the manner of manufacture and execution is not set out in the Contract, the work shall be executed in a proper, workman like and careful manner, with properly equipped facilities and non-hazardous Materials, and in accordance with modern recognized good practice.

Source of Materials **7.2** Source of materials being supplied shall be intimated to the Engineer and are subject to his approval. Materials that are not specified in the contract document shall confirm to the relevant Indian standard or in their absence, shall confirm to any international standard approved by the Engineer.

Save as otherwise expressly provided in the contract, sample shall be supplied by the Contractor at his own cost.

Delivery to Site **7.3** The Contractor shall be responsible for procurement, transport, receiving, unloading and safe keeping of all Plant, construction, Materials, Contractor's Equipment and other things required for the completion of the Works.

Inspection **7.4** The Employer and the Engineer shall at all reasonable times;

a. has full access to all parts of the Site and to all places from which natural materials are being obtained, and

b. during production, manufacture, fabrication and construction (at the site and elsewhere) be entitled to inspect, examine, measure and test the materials and workmanship, and to check the progress of manufacture, of all Plant and Materials to be supplied under the Contract.

The Contractor shall give the Engineer full opportunity to carry out these activities including providing access, facilities, permissions and safety equipment. No such activity/inspection shall relieve the Contractor from any obligation or responsibility.

Testing **7.5**

This sub- clause shall apply to all tests specified in the Contract and required to be carried out as per Quality Assurance plan.
The Contractor shall provide all documents and other information necessary for all types of testing and such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as are necessary to carry out such tests efficiently.

The Contractor shall agree, with the Engineer, the time and place for the testing of any Plant, Materials and other parts of the Works as specified in the Contract.

The Engineer shall give the Contractor not less than 24 hours' notice of his intention to attend the tests.

If the Engineer does not attend at the time and place agreed, or if the Contractor and the Engineer agree that the Engineer shall not attend, the Contractor may proceed with the tests, unless the Engineer instructs the Contractor otherwise. Such tests shall be deemed to have been made in the Engineer's presence.

The Contractor shall promptly forward to the Engineer duly certified reports of the tests. If the Engineer has not attended the tests, he shall accept the readings as accurate. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect.
The expense of conducting such Tests shall be borne by the Contractor. No such testing shall relieve the Contractor from any obligation or responsibility.

Rejection **7.6**

As a result of inspection, examination or testing, any Plant, Material, Design or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer may reject the same and by giving notice to the Contractor with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item after rectification complies with the Contract.
If the Engineer requires such Plant, Material, Design or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If such rejection and retesting cause the Employer to incur costs, such costs shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due, or to become due, to the Contractor.

"If the tests are required to be carried out from the outside laboratory, the Engineer shall decide and approve the laboratory and the sample shall be collected and sealed in presence of the Engineer or his authorised representative. The cost of testing shall be borne by the contractor and nothing extra shall be paid for the expenses incurred on the testing. In the event of variations in the results of in house testing and outside lab testing the decision of Engineer with respect to importance and relevance attached to a particular report and recourse to sort out the dispute arisen because of difference in results shall be final and binding on the contractor".

Liability after Inspection and Testing **7.7**

The Contractor shall not be released from any liability or obligation under the Contract by reason of any such inspection or testing or witnessing of testing, or by the submission of reports of inspection or testing to the Engineer.

Ownership of Plant and Materials **7.8**

Each item of Plant and Material shall become the property of the Employer, when it is delivered to Site or payment thereof, either in part or full, has been made. The Contractor shall however continue to bear the risk in respect of such items which continue to remain in his custody.

Cost of Employer's Attendance Including Travel	**7.9**	The Employer shall bear the costs of attendance including travel, boarding and lodging for the Employer, the Engineer or his assistant for the purposes of Sub-Clauses 7.5 and 7.5 above. The cost of attendance including travel, boarding and lodging for the Employer, Engineer or his assistants for the purpose of Sub-clause 7.5 shall be borne by the Contractor.
Covering up of Works	**7.10**	**Covering up of Works**
Examination of work before covering up	**7.10.1**	No work or part of work shall be covered up or put out of view, without the prior approval of the Engineer or the Engineer's Representative.
Cost of uncovering the work already covered up	**7.10.2**	The Contractor shall uncover any part or parts of the Works, or make openings in or through the same, as the Engineer may from time to time direct, and shall reinstate and make good such part or parts, to the satisfaction of the Engineer. If any such part or parts have been covered up, or put out of view after compliance with the requirement of Sub-clause 7.5 and the Works are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating and making good the same, shall be borne by the Employer, but if the Works are found to be defective, costs shall be borne by the Contractor. In case after completion of a part of the Work, the part of Work is not fully consistent with the Employer's Requirements and there is no way to change the same, in that case, the same (provided it has no implication on safety and operation) shall be accepted only as a Contractor's deemed variation at lower negotiated price. The decision of the Engineer in this regard shall be final and binding on the Contractor
Tests on Completion	**7.11**	**Tests on Completion**
Contractor's Obligations	**7.11.1**	The Contractor shall carry out the Tests on Completion at his own cost in accordance with the Contract and shall provide the documents in accordance with Sub-Clauses 5.4 and 5.5. The Contractor shall give, to the Engineer, 21days' notice of the date after which the Contractor will be ready to carry out the Tests on Completion. Unless otherwise agreed, such Tests shall be carried out within14days after this date, on such day or days as the Engineer shall instruct. Unless otherwise stated in Special Conditions of Contract, the Tests on Completion shall be carried out in the following sequence (a) pre-commissioning test, which shall include appropriate instructions and ("dry" or "cold") functional tests to demonstrate that each item of the Plant and Work can safely undertake the next stage (b) Commissioning Test shall include the specified operational tests to demonstrate Works or Sections can be operated safely and as specified under all available operating condition (c) trial operation which shall demonstrate that the Works or Section perform reliably and in accordance with the Contract

The Contractor at his own cost shall arrange all tools, equipment, gadgets, facilities or as deemed necessary by the Engineer for such tests, in considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed the Tests on Completion described in sub-paragraphs (a) (b) or (c), the Contractor shall provide the Engineer and the Employer with a certified report of the results of all such Tests.

Delayed Tests **7.11.2** If the Engineer opines that Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out such Tests within 21 days after the receipt of the notice. The Contractor shall carry out such Tests on such day or days as the Contractor may fix and of which he shall give notice to the Engineer.

If the Contractor fails to carry out the Tests on Completion within 21days, the Engineer may proceed with such Tests at the risk and cost of the Contractor. The Tests on Completion then shall be deemed to have been carried out in the presence of the Contractor and the results of such Tests shall be accepted as accurate.

Retesting **7.11.3** If the Works, or a part thereof, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.6 “Rejection” shall apply, and the Engineer or the Contractor may require such failed Tests and the Tests on Completion on any related work, to be repeated under the same terms and conditions at Contractor’s cost. Cost of Employer’s attendance shall be governed by clause 7.9 above.

Failure to Pass Tests on Completion **7.11.4** If the Works, or a part there of, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause7.11.3, the Engineer is entitled to:

(a) order further repetition of Tests on Completion under Sub-Clause 7.11.3;
(b) reject the Works, or a part thereof, or a Section (as the case may be), in which event the Employer shall have the same remedies against the Contractor as are provided under Clause 13; or
(c) Issue a Taking Over Certificate if the Employer so requires. The Contract Price shall then be reduced by such amount as determined by the Engineer and as shall be appropriate to cover the reduced value to the Employer as a result of this failure. The Contractor shall then proceed in accordance with his other obligations under the Contract.

Integrated testing and system **7.12** **Integrated testing and system commissioning**
Unless otherwise stated in Special Condition of contract (SCC), this sub clause shall not apply.

commissioning Integrated Testing **7.12.1** Tests on Completion shall also include Integrated Testing where applicable as per the contract condition. The Contractor shall, following satisfactory completion of tests on his works, equipment, sub-systems or system, perform, at the direction of the Engineer, programme of tests to verify and confirm the compatibility and complete performance of his works, equipment, sub-systems or system with the works, equipment, sub-systems or system provided by others.

Compilation of Test Results **7.12.2** The results of the Integrated Testing and Commissioning shall be compiled and evaluated by the Engineer and the Contractor.

Retesting **7.12.3** If the Works, or a part thereof, or a Section, fail to pass the Integrated Testing and Commissioning, the Engineer may order such failed tests to be repeated with the same terms and conditions. If such failure and retesting result from a default of the Contractor and cause the Employer to incur costs, the same shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any amount due, or to become due, to the Contractor.

Failure to Pass Test **7.12.4** If the Works, or a part there of, or a Section, fail to pass Integrated Testing and Commissioning and the Contractor in consequence proposes to make any adjustment or modification to the Works or a part thereof, or a section, the Engineer may, with the approval of the Employer, instruct the Contractor to carry out such adjustment or modification, at his own cost and to satisfy the requirements of Integrated Testing and Commissioning within such time as the Employer / Engineer may deem to be reasonable.

Statutory Requirements **7.12.5** The Design and Construction Standards to be adopted by the Contractor shall be in conformity with the requirements of "Rules for Opening of a Railway or a Section of a Railway for Public Carriage of Passengers" and "Rules for Introduction of New Type of Rolling Stock" and to the satisfaction of the Commissioner of Metro Railway Safety (CMRS) whose sanction is mandatory for commissioning of the System.

The Contractor along with others under the supervision of the Engineer, shall carry out all tests and trial run and prepare reports and documents, required for obtaining all approval and sanction of the Commissioner of Metro Railway Safety (CMRS) and any other statutory authority for introduction of the system for public carriage of passengers.

8 Commencement, Completion and Delay

Commencement of Works **8.1** The Contractor shall commence the Works on the date as stated in 'Contract data'. Thereafter, the Contractor shall proceed with due diligence, without delay, and in accordance with the programme or any revised or modified programme of the Works. Time is the essence of Contract and time for Completion shall reckon from the date the Contractor is required to commence the Works under this Clause.

The Contractor shall not commence the construction, manufacture or installation of the Works or of any part of the Works unless and until the Engineer has endorsed the relevant Working Drawings in accordance with the Employer's Requirements.

Time for Completion **8.2** Time is the essence of Contract and will remain so at all times during the pendency of the Contract including the extended period of Contract. The Contractor shall ensure defect free completion and have passed the tests on Completion of the whole of the Works and/or parts thereof before the same is taken over by the Employer. Time for the completion of work is as stated in 'Contract Data'.

Delay **8.3** In case of delay on the part of the Contractor, the Contractor shall be liable to pay Liquidated damages and any other compensation for the damages suffered by the Employer as per Clause 8.5. This is without prejudice to the right of the Employer to rescind the Contract.

Failure or delay by the Employer or the Engineer, to hand over to the Contractor the Site necessary for execution of Works, or any part of the Works, or to provide necessary Drawings or instructions or clarifications or to supply any material, plant or machinery, which under the Contract, is the responsibility of the Employer, shall in no way affect or vitiate the Contract or alter the character thereof, or entitle the Contractor to damages or compensation thereof and in any such case, the Engineer shall extend the time period for the completion of the Contract, as in his opinion is / are reasonable.

Extension of Time for Completion **8.4** **Extension of Time for Completion**

Extension of Time **8.4.1** The Contractor may apply for an extension of the Time for Completion if the Work is or will be delayed either before or after the Time for Completion by any of the following causes.

a. "Force Majeure" referred to in Clause 16.0
b. The Contractor's work held up for not being given possession of or access to the Site in accordance with the Contract
c. Instruction of the Engineer to suspend the Works and the Contractor not being in default as to reasons of suspension.
d. Acts or omissions of other Designated Contractors in executing work not forming part of this Contract and on whose performance, the performance of the Contractor necessarily depends.
e. Any act of prevention or Breach of the Contract by the Employer and not mentioned in this Clause
f. Any order of Court restraining the performance of the Contract in full or in any part thereof and the Contractor not being in default as to reason of such order of court.
g. Any other event or occurrence which, according to the Employer is not due to the Contractor's failure or fault, and is beyond his control without Employer being responsible for the same.
h. An Employer's Variation.

However, the Contractor shall not be entitled to any extension of time where the instructions or acts of the Employer or the Engineer are necessitated by or intended to cure any default of or breach of Contract by the Contractor or where any delay is due to;

a. the failure of sub-contractor, to commence or to carry out work in due time,
b. non-availability, or shortage of Contractor's equipment, labour, utility services, Plant and Materials,
c. inclement weather conditions, and
d. the Contractor not fulfilling his obligations under Sub-Clause 4.4.

If the Contractor considers himself to be entitled to an extension of time for Completion, he shall give notice to the Engineer of such intention as soon as possible and in any event within 28 days of the start of the event giving rise to the delay and full and final supporting details of his application within 21 days of the last day of delay, together with any notice required by the Contract and relevant to such Clause. If the cause of delay continued for a period exceeding 7 days, the Contractor shall submit interim details at intervals of not more than 28 days (from the first day of such delays).

The Engineer shall proceed in accordance with Sub-Clause 3.5 to agree or determine either prospectively or retrospectively such extension of the Time for Completion as may be due. The Engineer shall notify the Contractor accordingly.

Extension of time for completion for other reasons **8.4.2** The Contractor shall not be entitled to an extension of time by reason of any delay to any activity in carrying out of the Works unless in the opinion of the Engineer such delay results in or may be expected to result in a delay to completion of the Works, or achievement of any Stage by the relevant Key Date. Whether or not the Contractor fails to achieve any Milestone by reason of any delay shall not by itself be material to the Contractor's entitlement to an extension of time.

Any extension to a Key Date shall not by itself entitle the Contractor to an extension to any other Key Date and the Time for Completion.

Extension of time for delays due to Contractor	**8.4.3**	If the delay in the completion of the whole Works or a portion of the Works, for which an earlier completion period is stipulated, is due to the Contractor's failure or fault, and the Engineer is of the view that the remaining Works or the portions of Works can be completed by the Contractor in a reasonable and acceptable short time, then, the Engineer may allow the Contractor extension or further extension of time at its discretion with or without Liquidated damages, for completion, as he may decide.
Failure to seek Extension of time by contractor	**8.4.4**	Non-application by the contractor for seeking Extension of time shall not be a bar for giving a fair and reasonable Extension by the Employer and this shall be binding on the contractor.
Liquidated Damages for Delay	**8.5**	Time is the essence of the Contract. As per "contract data" defined percentage of the total contract value will be recoverable from the Contractor as Liquidated damages for each week or part thereof for delay in completion of the each Key dates and/or Whole of the Works subject to a specified maximum limit as defined in "contract data". The Liquidated damages are recovered by the Employer from the Contractor for delay. The Parties agree that amount of Liquidated Damages leviable under the Contract are the genuine estimate loss suffered by the Employer because of which the Liquidated Damages have been levied on the Contractor. The Liquidated Damages may also be recovered from the amount of Performance security and in that case the Contractor would be liable to replenish the amount of Performance Security. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due, or to become due, to the Contractor. In the event of an extension of time being granted under Sub-Clause8.4, the amount due under this Sub-Clause shall be recalculated accordingly, and any over-payment recovered. The payment or deduction of such damages shall not relieve the Contractor from his obligations to complete the Works, or from any other of his duties, obligations or responsibilities under the Contract. The Contractor shall use and continue to use his best endeavours to avoid or reduce further delay to the Works, or any relevant Stages. At any time after the Employer has become entitled to Liquidated damages, the Engineer may give notice to the Contractor under Sub- Clause 13.1, requiring the Contractor to complete the Works within a specified reasonable time. Such action shall not prejudice the Employer's entitlements to recovery of Liquidated damages, under this Sub-Clause and to terminate under Sub- Clause 13.2. The decision of the Engineer as to the compensation payable by the Contractor under this Clause shall be final and binding.
Rate of Progress	**8.6**	If for any reason which does not entitle the Contractor to an extension of time, the rate of progress of the Works is at any time, in the opinion of the Engineer, too slow to ensure timely completion of the Works or achievement of any Stage by the relevant Key Date the Engineer may so notify the Contractor in writing. The Contractor shall thereupon take such steps as are necessary, or in default of taking such steps, shall take such steps as the Engineer may reasonably instruct in writing, to expedite progress so as to complete the Works or any Section in time or achieve any Stage by the relevant Key Date. The Contractor shall not be entitled to any additional payment for taking such steps. If any steps taken by the Contractor in meeting his obligations under this Sub-Clause cause the Employer to incur additional costs, such costs shall be recoverable from the Contractor by the Employer, and shall be deducted by the Employer from any monies due, or to become due, to the Contractor.

If, in the opinion of the Engineer, the steps taken by the contractor to expedite the progress are not adequate, the Engineer may take a recourse as per clause 13.2.1 of this GCC

Suspension of Work **8.7**

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works stating the grounds for such action. During suspension, the Contractor shall protect, store and secure such part or whole of the Works against any deterioration, loss or damage.

Consequences of Suspension **8.8**

The Contractor shall not be entitled to extra cost (if any), incurred by him, during the period of suspension of Work, if such suspension is

a. provided for in the Contract, or
b. necessary for proper execution of Works or by reasons of weather condition or by some default on the part of the Contractor, or
c. necessary for the safety of Works or any part thereof or
d. necessary for the safety of adjoining public or other property or safety of the public or workmen or those who have to be at the site or
e. to ensure safety and to avoid disruption of traffic and utilities, as also to permit fast repairs and restoration of any damaged utilities,

If suspension is ordered by the Engineer for reasons other than those mentioned in Sub Clause 8.8 then the Contractor's entitlement is in the table below. However, Engineer's decision is final and binding in regard to defining suspension and specifying the suspension period. Contractor has no right to claim or appeal against this decision.

Sr. No.	Suspension Period	Extension of Time	Compensation for the suspension period	Remarks
1	Up to 60 days	NO	NO	Engineer may give extension of time in exceptional circumstances
2	60-90 days	YES	NO	Extension of time as considered proper by the Engineer
3	Above 90 days	YES	As per Daily rate of wages for idle labour/employees 70% of the rate for hire charges for idle plant and machinery (excluding cost of fuel and lubricants) 15% above all these items to cover overhead costs	Compensation as assessed by the Engineer on submission of documentary proof by the Contractor to Engineer's satisfaction

Resumption of Work **8.9**

After receipt of permission or of an instruction to proceed, the Contractor shall, after notice to the Engineer, and together with the Engineer, examine the Works, Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works, Plant and Materials, which has occurred during the suspension.

Incentives for early completion of Whole work **8.10** The contractor shall be entitled for an incentive for early completion of whole work if specified in the Contract Data, Maximum incentive shall be payable limited to as specified in the contract data

9 Handing over by Contractor and Taking over by Employer.

Taking Over Certificate **9.1** The works shall be taken over by the Employer when they have been completed in accordance with the Contract, have passed the Tests on Completion including integrated testing and commissioning wherever applicable as per contract. The Taking Over Certificate for the Works will be issued by the Engineer/Employer.

If the Works are divided into sections/stations/Depot/Reaches, the Contractor shall be entitled to apply for a Taking Over Certificate for each section/station. The Contractor may apply by notice to the Engineer for a Taking-Over-Certificate not earlier than 14 days before the works in the Contractor's opinion, be complete and ready for taking over. The Engineer shall, within 28 days after the receipt of the Contractor's application:

(a) Issue the Taking Over Certificate to the Contractor, stating the date on which the Works or section/station were completed, including the Tests on Completion including integrated testing and commissioning wherever applicable as per contract. (except for minor outstanding work that does not affect the use and safety of the Works or Section for their intended purposes); The list of such Works along with the target date of completion for each Work shall be enclosed with the Taking Over Certificate and completion of all these Works / Rectification of defects within the stipulated time shall be the responsibility of the Contractor and any failure in it may be considered a reason by the Engineer to cancel the Taking Over Certificate issued earlier; or

(b) Reject the application, giving his reasons and specifying the work required to be done by the Contractor to enable the Taking Over Certificate to be issued. The Contractor shall then complete such work before issuing a further notice under this Sub-Clause.

Taking over of Parts of the Works **9.2** The Engineer may, at the sole discretion of the Employer issue a Taking Over Certificate for any part of the Permanent Works.
If the Employer uses any part of the Works for revenue service before the Taking Over Certificate is issued:

(a) The part which is used shall be deemed to have been taken over at the date on which it issued,

(b) The Engineer shall, immediately issue a Taking Over Certificate for this part, and outstanding work to be completed (including Tests on completion) and/ or defects to be remedied shall be listed in this certificate. The contractor shall carry out these works as soon as practicable and, in any case before the expiry of the relevant DLP and

(c) the Contractor shall cease to be liable for the care of such part from such date, when responsibility shall pass to the Employer, except for deficiency and defects listed in

10 Defects Liability

Completion of Outstanding Work and Remedying Defects **10.1** "Defects Liability Period" is as stated in 'Contract Data' from the date of Taking over mentioned in the Taking Over Certificate being issued for whole of the Works and not any sub-section or part thereof.
Provided that, if any part of the Works or sub-systems or component of that part has been replaced, renewed or repaired, the "Defects Liability Period" in respect of that part or sub-system or components of that part shall start from the date of such replacement, renewal or repair has been completed to the satisfaction of the Engineer.

The Contractor shall remedy, at no extra cost to the Employer, the defect or failure (fair wear and tear excluded) after any part of the Work are taken over by the Employer until the end of Defects Liability Period.

In order that the Construction and/or Manufacture Documents and the Works shall be in the condition required by the Contract(fair wear and tear excepted)at, or as soon as practicable after the expiry of the Contract Period, the Contractor shall:

(a) Complete any work which is out standing on the date stated in a Taking Over Certificate, as soon as practicable after such date, and
(b) Execute all such work of amendment, reconstruction, and remedying defects or damage, as may be instructed in writing by the Employer or the Engineer during the Contract Period.

Cost of Remedying Defects **10.2**

All work referred to in Sub-Clause10.1(b)shall be executed by the Contractor at his own cost, if the necessity for such work is due to:

(a) Design (if any) of works for which the contractor is responsible.
(b) Plant, Materials or workmanship not being in accordance with the Contract ; or
(c) Failure by the Contractor to comply with any of his other obligations.

If in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an adjustment to the Contract Price, with the approval of the Employer, and shall notify the Contractor accordingly. In this event, Sub-Clause12.3 shall apply to such work.

Extension of Defect Liability Period **10.3**

The Defect Liability Period as mentioned in clause 10.1 shall be extended by a period, after the Works are taken over, during which the Works or any Section or item of Plant, cannot be used, for the purposes for which they are intended, by reason of a defect or damage.
When delivery of Plant, and/or Materials, or erection of Plant, or installation of Materials, has been suspended under Sub-Clause8.7, the Contractor's obligations under this Sub-Clause shall not apply to any defects or damage occurring more than three years after the Plant and/or Materials would otherwise have been delivered, erected and taken over.

Failure to Remedy Defects **10.4**

If the Contractor fails to remedy any defect or damage within a reasonable time as deemed by the Employer/Engineer, the Employer/Engineer may specify a deadline for rectification and notify the Contractor accordingly. If the Contractor fails to meet this deadline and the necessity for the work arises from causes specified in Sub-Clause 10.2(a), (b), or (c), the Employer may, at his sole discretion;

(a) Carry out the work himself or through others, in the manner required under the contract and at the Contractor's risk and cost. The Contractor shall have no responsibility for such work, and the Employer shall recover the costs incurred in remedying the defect or damage from the Contractor,
(b) Require the Engineer to determine and certify a reasonable reduction in the Contract Price; or
(c) If the defect or damage is such that the Employer has been deprived of substantially the whole of the benefit of the Works or parts of the Works, terminate the Contract in respect of such parts of the Works as cannot be put to the intended use, the Employer shall then be entitled to recover all sums paid for such parts of the Works together with the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor, and Sub-Clause 13.1 shall not apply.

Removal of Defective Work	**10.5**	If the defect or damage is such that it cannot be remedied expeditiously on the Site and if the Employer gives consent, the Contractor may, remove from the Site for the purposes of repair any part of the Works**,** which is defective or damaged. This consent may require the Contractor to submit Security amount in the form of Bank Guarantee (in 'Physical form' or 'e- Bank Guarantee') for the full replacement cost of these items or to provide other appropriate security acceptable to the Employer.
Further Tests after Remedying Defects	**10.6**	If the remedying of any defect or damage is such that it may affect the performance of the Works, the Engineer may require that Tests on Completion, be repeated to the extent necessary. The requirement shall be made by notice within 28 days after the defect or damage is remedied. Such Tests shall be carried out in accordance with Sub Clause 7.11.
Right of Access till issue of performance certificate	**10.7**	Until the Performance Certificate has been issued, the Contractor shall have the right of access to all parts of the Works and to records of the working and performance of the Works, except as may be inconsistent with any reasonable security restrictions by the organisation responsible for operating the Works.
Contractor to Search	**10.8**	The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is one for which the Contractor is liable, the Cost of such search shall be added to the Contract Price.
Performance Certificate	**10.9**	Performance of the Contractor's obligations shall not be considered to have been completed until the Employer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract. The Employer shall issue the Performance Certificate **within 28 days** after the expiry of the Defects Liability Period (last date of any extended Defect Liability period). Only the Performance Certificate shall be deemed to constitute acceptance of the Works.
Unfulfilled Obligations	**10.10**	After the Performance Certificate has been signed by the Engineer and delivered to the Contractor, stating the date on which the Contractor completed his obligations to the Engineer's satisfaction, the Contract shall be considered to be complete. However, the Contractor and the Employer shall remain liable for the fulfilment of any obligation, which remains unperformed at that time. For the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force. Even after expiry of the defect liability period, the Contractor would continue to remain liable to the Employer for any cost, loss, damage or compensation which arises from hidden or latent defect in the work executed by the Contractor under the Contract, even if such hidden and latent defects arise after the expiry of Defect Liability period or grant of Performance Certificate by the Employer under the Contract to the Contractor
Emergency defect rectification	**10.11**	If any defect or damage is one requiring immediate attention from safety, environmental or operational viewpoint, the Engineer has the authority to proceed with rectification in any manner suitable and deduct such sums from the Contract Price.

11 Contract Price and Payment

The Contract Price

11.1 Contract Price

Contract Price is the sum stated in the Letter of Acceptance, subject to such additions or deductions as may be made under the provisions of the Contract. The Contractor shall be responsible for and shall pay all taxes, duties, royalties, and fees arising from or required under this Contract, except as specifically provided herein. The Employer shall reimburse Output GSTto the Contractor in accordance with the provisions of the Goods and Services Tax Act, 2017 and the rules made thereunder.
The Contract Price shall remain firm and shall not be subject to any adjustment on account of tax-related changes, except for adjustments expressly permitted under Sub-Clause 11.1.1

11.1.1 Change in Law

The Contract Price is based on the applicable taxes as on last day of the month previous to the month of invitation of this tender. Any subsequent change in these laws that becomes effective after this date shall be considered a 'Change in Law' for the purposes of this Clause

i. Any imposition, abolition, increase, decrease, or change in the rate or scope of any tax, duty, levy, or cess (including but not limited to Goods and Services Tax (GST)) applicable to the output of the Works/Services under this Contract, whether by way of primary legislation, notification, circular, or judicial pronouncement, shall result in a corresponding adjustment to the Contract Price, limited to the actual variation in tax liability arising from such change, calculated on the value of the portion of the Works executed after the effective date of such change.
ii. The adjustment contemplated in the preceding paragraph shall not apply to any taxes, duties, royalties, or fees arising from or required under this Contract in relation to the inputs for the Works. Such input-related levies shall remain the sole responsibility of the Contractor and shall not give rise to any change in the Contract Price.
iii. Should there be a partial or complete waiver or exemption for any taxes and duties, etc. in full or part thereof during the execution of the project, the contractor shall be obliged to follow and obtain exemption / refund of such taxes, duties etc., from the concerned Authorities and pass on the benefit so obtained to the employer. In case of failure by the contractor to obtain and remit the exemption / concession within reasonable time to the employer (to be decided by the employer& intimated to the contractor), the same will be recovered by the employer from the amounts due to the contractor.
iv. The Contractor shall maintain complete records in respect of payments made by them for taxes and duties payable to various authorities (except Income Tax or Corporate Tax) and advise the Employer the summary of such payment every month in a format advised by the Employer during execution of the contract.
v. The detailed records shall however remain open for inspection by the Engineer at any time and copies of the records shall be furnished as required by the Engineer. The amount payable/recoverable from the contractor will generally be calculated based on these records. However, Engineer at his sole discretion, if not satisfied with the veracity of records or records are incomplete or otherwise, may separately determine the amount payable/recoverable from the contractor in accordance with the conditions of the contract, which shall be final and binding.

vi. Custom Duty

Bangalore Metro Rail Project is eligible for the concessional rate of custom duty under Chapter 98.01 of Custom Tariff Act for Project Imports. All the process of project import registration, deposits of security money (if any) to custom authority and refund back after the completion of imported supplies shall be the responsibility of contractor. The contractor shall indemnify BMRCL of clearance and projects imports proceedings. Upon receipt of request from contractor, BMRCL will issue authorization letter or facilitate the Contractor for obtaining sponsoring/recommendation letter from the Ministry of Housing and Urban Affairs (MoHUA) or from the Government of Karnataka (GoK) or any other authority as the case may be for getting the project registered with the Custom Department for availing Project Import benefits

i. Project Authority certificate shall be issued by the Employer for imported items. The imports for the metro project under Project Import Regulation (PIR) are covered under HSN 98010019(other Projects) and present Basic custom duty (BCD) applicable as mentioned in 'Contract Data'.

i. Any change in the rate of existing Basic custom duty (BCD) will be reckoned by payment of extra amount in case of increase of Basic custom duty (BCD) based on difference of revised Basic custom duty (BCD) and existing Basic custom duty (BCD) or by recovery amount if the BCD reduces with respect to the existing BCD.

Price Variation/ Adjustment in Contract Price

11.1.2 **Price Variation/ Price Adjustment:**

Price Variation / Adjustment is applicable, if value of weightages (coefficients) are given in the 'contract data'. If no value of weightages (Coefficients) given in 'Contract Data', Price variation / adjustment shall not be applicable. The rates as per the accepted Bill of Quantities shall be applicable until the completion of the Work and will be varied only to the extent of permissible price variation under this Clause. However, this adjustment shall be to the extent that full compensation for any rise or fall in costs to the Contractor if not covered by the Price variation formula, the rates in the accepted Bill of Quantities shall be deemed to include amounts to cover the contingency of such rise or fall in costs.

Payment as per the contract shall be subject to adjustment in accordance with the following Price Variation formula, and other terms given herein, to provide for variation in the market rates of inputs like labour, materials and fuel / energy during the currency of the Contract:

i. $\mathbf{V = V_L + V_F + V_M + V_P + V_S + V_C}$ Where

V = Total adjustment on account of all components.

V_L = Adjustment on account of labour component.

V_F = Adjustment on account of High speed diesel component.

V_M = Adjustment on account of other materials component.

V_P = Adjustment on account of Plant, machinery and spares.

V_S = Adjustment on account of steel component.

V_C = Adjustment on account of cement component.

a. Adjustment for labour Component:

Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with following formula. (Base: 2016=100).
V_L= R X P_L x [(Li – Lo)/Lo] Where

V_L= Increase or decrease in the cost of work during the month under consideration due to change in rates for local labour.

Lo =The average consumer price index for industrial workers for Bangalore Centre as applicable for the month of submission of the tender as published by Labour Bureau, Ministry of Labour, GOI.

Li = The average consumer price index for industrial workers for Bangalore Centre during the 'month under consideration' as published by Labour Bureau, Ministry of Labour, GOI.

P_L =cost co-efficient of "Labour" to the total cost.

b. Adjustment for High Speed Diesel component:

Price adjustment for increase or decrease in the cost of High Speed Diesel component shall be paid in accordance with following formula (Base: 2011-12=100).

V_F = R X P_F x [(Fi –Fo)/Fo] where

VF = Increase or decrease in the cost of work during the month under consideration due to change in rates for High Speed Diesel components.

Fo = The all India average wholesale price index for High Speed Diesel component as applicable for the month of submission of the tender as published by Office of the Economic Adviser.

F_i = The all India average wholesale price index for High Speed Diesel component for the 'month under consideration' as published by Office of the Economic Adviser.

$P_{F=}$ cost co-efficient of "Fuel and Lubricants" to the total cost.

c. Adjustment on account of other materials component:

Price adjustment for increase or decrease in the cost of other materials component shall be paid in accordance with following formula (Base: 2011-12=100).
V_M = R X P_M x [(Mi –Mo)/Mo] where

V_M = Increase or decrease in the cost of work during the month under consideration due to change in rates for other material components.

Mo = the wholesale price index for all commodities as applicable for the month of submission of the tender as published by Office of the Economic Adviser.

Mi = The whole sale price index for all commodities during the month preceding the 'month under consideration' as published by Office of the Economic Adviser.

P_M =cost co-efficient of "other materials" to the total cost

d. Adjustment on account of Plant, machinery and spares:

Price adjustment for increase or decrease in the cost of plant, machinery and spares component shall be paid in accordance with following formula (Base: 2011-12=100).

$V_P = R \times P_P \times [(Pi – Po)/Po]$ where

V_P = Increase or decrease in the cost of work during the month under consideration due to change in rates for plant, machinery and spares components.

Po = the wholesale price index for **manufacture of machinery for mining, quarrying and construction** as applicable for the month of submission of the tender as published by Office of the Economic Adviser.

Pi = the wholesale price index for **manufacture of machinery for mining, quarrying and construction** during the month preceding the 'month under consideration' as published by Office of the Economic Adviser.

P_P=cost co-efficient of "Plant, machinery and spares" to the total cost.

e. Adjustment on account of steel component:

Price adjustment for increase or decrease in the cost of Steel shall be paid in accordance with following formula. (Base: 2011-12=100)

$V_S = R \times P_S \times [(Si – So)/So]$ where

V_S= Increase or decrease in the cost of work during the month under consideration due to change in rates for Structural Steel / TMT rebars / MS Steel / Pre-stressing strands.

So = the all India average wholesale price index for **Mild Steel – Long products** as applicable for the month of submission of the tender as published by Office of the Economic Adviser.
Si = the all India average wholesale price index for **Mild Steel – Long products** for the month preceding the 'month under consideration' as published by Office of the Economic Adviser.

P_S=cost co-efficient of "steel" to the total cost.

f. Adjustment on account of cement component:

Price adjustment for increase or decrease in the cost of cement shall be paid in accordance with following formula. (Base: 2011-12=100)

$V_C = R \times P_C \times [(Ci – Co)/Co]$ where

VC= Increase or decrease in the cost of work during the month under consideration due to change in rates for cement component.
Co = The all India average wholesale price index for **Ordinary Portland Cement** as applicable for the month of submission of the tender as published by Office of the Economic Adviser.
Ci = The all India average wholesale price index for **Ordinary Portland Cement** for the month preceding the 'month under consideration' as published by Office of the Economic Adviser.

P_C=cost co-efficient of "Cement" to the total cost.

g. R= "**Gross value of the work done**" by the Contractor for the period of work under consideration, after excluding there from the cost of any materials supplied free or at fixed rate to the Contractor as also any specific payments to be made to the Consultants engaged by the Contractor, which shall be indicated in the Contractor's offer letter.

"Gross value of the work done" means work done value of the all the schedules of BoQ. **Unless otherwise specified in 'contract Data', determination of Price variation is applicable to all the schedules of BoQ.**

h. "P_L", "P_F", "P_M","P_P","P_S","P_C" and "P_X" are weightages (coefficients) of the Components representing the estimated proportion of Labour, Fuel, Other Materials, Plant& Machinery, Steel, Cement cost element and Nonadjustable Fixed component related to the execution of the Works, as stated in the relevant table in 'contract data'.

ii. Period of Work under consideration will mean as under:

a. In the case of first "On- account Bill" (IPC) the period from the month in which the Contract agreement executed to the month of measurement of the first bill.
b. In the case of second and subsequent "On-account" (IPC) and final bills, the Period from the date of measurement for previous bill to the date of measurement of that bill.

iii. Note:

1. Responsibility of arranging the Price indices from the Office of the Economic Adviser/ Labour Bureau (Ministry of Labour, GOI) etc., as desired by the Employer or the Engineer shall rest with the Contractor.
2. In case, Office of the Economic Adviser stops publishing the Price indices, then Price indices of any other Government Publications shall be considered.

iv. Procedure in case of Delay in Availability of Final Indices:

Where the final Price Indices are not available in the Office of the Economic Adviser, while making payment towards On-account bills(IPC), payment towards Price Variation will be made on provisional basis based on the indices available, to be adjusted in subsequent Payments as and when the final Indices figures become available.

11.1.2.1 Adjustment on Account of Price Variation:

Adjustment on account of Price Variations may be positive (in which case extra amount shall be paid to the Contractor), or negative (in which case the amount of Price Variation shall be recovered from the Contractor). Adjustment on account of Price Variation shall be calculated separately, for each period, between two successive dates of measurements for bills and to be claimed in each IPC.

Preferably contractor to submit IPCs (RA Bills) monthly. In case, the IPCs (RA Bills) submission period is more than One Month, then the indices considered in price adjustment formula shall be average of the indices of the corresponding months under consideration between previous and present IPCs.

11.1.2.2 If any item of work is derived from COMMON SR of KPWD under the BoQ schedule "ITEMS UNDER SCHEDULE OF RATE PUBLISHED BY KPWD" the price variation is applicable.

11.1.2.3 Price Variation during Extended Period of Completion:

The price adjustment will be applicable for the work done from the date of commence to the stipulated completion date of the work including the extended period of completion where such extension has been granted under Sub-Clause 8.4.1 of GCC or it is specifically mentioned that extension is with price variation also. However, where extension has been granted under Sub-Clause 8.4.3 of GCC, price adjustment will be reckoned as follows:

In case the indices increase above the indices applicable to an IPC made on the last date of original completion period or the extended period under Sub-Clauses 8.4.1 of GCC, the price adjustment for the period of extension under Sub-Clause 8.4.3 of GCC will be limited to the amount payable as per the indices applicable to the IPC made on the last date of the original completion period or the extended period under Sub-Clauses 8.4.1 of GCC as the case may be.

In case the indices fall below the indices applicable to an IPC made on the last date of the original completion period or extended period of completion granted under sub clause 8.4.1, then the lower indices will be adopted for Price Adjustment for the period of extension under Clause 8.4.3 of GCC.

11.1.2.4 Price Variations for extra item of work:

If the extra item of work is derived in accordance with clause GCC12.3.2, price variation shall not be applicable up to Twelve months from the base month recommended by the Engineer. However, when the period of execution of such items exceeds more than Twelve months' price variation is applicable and the Base month for calculation of Price Variation will be the month in which NT item has been recommended by the Engineer.

Advance Payments

11.2 Advance Payments

All Advances as admissible and stated under sub-clause of GCC 11.2 shall be payable only on Contractor's written request to the Employer. All Advance payments will be paid against submission of an unconditional and irrevocable Bank Guarantee (in physical form or e-BG) or Insurance Surety bond by the Contractor, as set out below:

(a) The Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond shall be drawn in favour of Bangalore Metro Rail Corporation Limited and payable & extendable at a designated branch in Bangalore; in the prescribed form given in Contract Form-2/2A to Contract Forms. In case of Bank Guarantee, it shall be issued from an Indian Schedule bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule. In case of Insurance Surety Bond, tit shall be issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI). In case of Joint Venture, Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond can be furnished by any member or members of the JV.

(b) Wherever Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond is to be extended or fresh Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond is to be obtained, the cost on account of this and other incidental charges will be on contractor's account.

(c) BMRCL is not liable to pay GST on any advances paid to the contractor.

(d) The Contractor shall issue the receipt voucher for having received the advance to the Employer as per the GST Laws.

Mobilisation Advance **11.2.1**

Interest Free Mobilization Advance shall be paid for an amount as stated in the 'Contact Data'. The number of instalments (if more than one) and their proportions shall be as stated in the contract Data. If an amount is not stated in 'contract data' this sub- clause shall not apply.

The Contractor shall have, prior to making a request for the first instalment of mobilization advance, (a) submitted the Performance Security in accordance with the Contract, (b) commenced the mobilization process as certified by the Engineer and (c) shall submit an unconditional and irrevocable Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond for a value of 110% of the advance amount.

The Contractor shall have, prior to making a request for the second instalment of the mobilization advance; (a) submitted a statement of utilization of the first instalment of mobilization advance paid to the Contractor along with a certificate from the Engineer and (b) shall submit an unconditional and irrevocable Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond for a value of 110% of the advance amount.

The Mobilization Advance shall be paid by the Employer within 30 days of receipt of request letter from the contractor.

Advance against Plant and Machinery **11.2.2**

Interest Free Plant & Machinery Advance shall be paid for an amount as stated in the 'Contact Data'. If an amount is not stated in 'contract data' this sub- clause shall not apply.

This advance is payable in the currency (i.e.) and in same proportion as stated in the LoA against plant & machinery and staging materials, provided the same have reached the site, or in the case of new items meant specifically for the works, firm purchase order has been placed and the invoices received. The plant and machinery shall be valued by the Engineer as follows:

(a) New Machinery 80% of purchase price
(b) New staging materials 80% of purchase price

Advance will be paid against submission of an unconditional and irrevocable Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond for a value of 110% of the advance amount.

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The Advance against Plant & Machinery and staging materials will be paid by the Employer within 30 days' of receipt of request letter from the contractor.

The Contractor should give an Undertaking that "No advance/loan has been taken against the subject plant &machinery from any other individual/financial institution/ organization etc." If a wrong/false undertaking is given, all the Bank Guarantees can be forfeited and the contract is liable for termination under clause 13.0 of GCC.

The contractor shall submit along with Bank Guarantees;

(i) the invoice and RC book (wherever applicable) in original at the time of obtaining advance amount.

(ii) an Indemnity bond in favour of an Employer as against Third Party claim.

(iii) Contractor shall not seek the possession of machinery and staging material brought to the site till the Advance obtained from Employer is fully settled.

The contractor should ensure that in the case of "Machinery and Equipment Advance" insurance and hypothecation in favour of the Employer should be done. The contractor should submit the proof of document related to Insurance and Hypothecation to the Engineer who will certify that the insurance and hypothecation to the Employer has been done in proper manner.

Employer shall be the sole custodian of the entire plant & machinery and staging materials whenever the advance amount is given to the contractor and the same shall remain in the custody of Employer, till the Advance obtained from Employer, is fully settled.
The machinery, equipment and staging material brought to the site shall be exclusively intended for the execution of the work of Employer and shall not be removed without the consent of the Engineer.
The contractor shall indemnify and hold harmless, the Employer against all actions, suits, proceedings, claims, damages, losses, expenses, demands pertaining to Advance amount towards plant and machinery.

The contractor;
a) Shall not mortgage / create charge / hypothecate /encumber, in any way the machinery, equipment and staging material brought to site from the amounts advanced by Employer and shall give an undertaking in writing to that effect in favour of Employer. For other machinery and staging materials not advanced by BMRCL the contractor can mortgage the same for financial undertakings.
b) Shall not sell or alienate any part/portion of machinery, equipment and staging material without the consent of Employer.
c) In the event of any such sale/alienation of any portion or part of machinery or staging materials, Employer shall hold First Charge and the proceeds of such sale or alienation shall be appropriated towards the loan/ credit/ advance in respect of plant & machinery and staging materials brought to the site by contractor.

Special / Acceleration Advances **11.2.3** The cumulative Special/Acceleration Advance shall be paid for an amount as stated in the 'Contact Data'. If an amount is not stated in 'contract data', this sub-clause shall not apply. The Special advance shall be payable in the currency and in same proportion as stated in the LoA, which shall be released in stages as and when deemed appropriate as decided by the Engineer/Employer. The advance released at a time shall not exceed 2.5% of the contract price.

Employer at his sole discretion, may provide Special/ Acceleration Advance based on the recommendation of the Engineer to expedite works or to bring forward the completion date(s) and on account of immediate additional mobilisation to complete balance works as targeted, the Employer may grant 'Special/ Acceleration Advance' to the contractor.
The Special/ Acceleration Advance shall carry interest at the prevailing one-year MCLR of the State Bank of India. Further, if the contractor does not accelerate even after getting the advance and does not fulfil the commitments regarding work, then the simple interest shall be levied @ 18% per annum on the balance amount to be recovered against the Special/ Acceleration advance, from the date of communication to the contractor by the Engineer/Employer. The Special/ Acceleration Advance shall be paid on request of the Contractor.
Special Advance will be paid against submission of an unconditional and irrevocable Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond for a value of 110% of the advance amount.

Recovery of Advances **11.2.4** The recovery of advances granted under Sub-Clauses 11.2 commences once 15% of the original Contract Price has been paid and shall be completed by the time 85% of the original Contract Price has been paid or by the original Date of Completion, whichever occurs earlier. The total recovery from each Interim Payment Certificate (IPC) shall not exceed 30%. Recoveries shall be effected in the same proportion of currency (ies) in which the advance was originally paid.
No request for deferment of recovery of interest-free advances, namely Mobilization Advance and Plant & Machinery Advance, shall ordinarily be entertained. However, in exceptional circumstances, such as low billing or to ease the Contractor's cash flow, BMRCL may consider such requests subject to the following conditions:

(i) The amount of deferred recovery shall be treated as a Special Advance.

(ii) The Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond shall neither be released nor reduced until full recovery of the Special Advance.

(iii) The Contractor shall pay interest at the prevailing one-year MCLR of the State Bank of India.

SBI MCLR shall be applicable on such Special Advance from the date of the IPC in which recovery is deferred until the date of full recovery, at the prevailing one-year MCLR of the State Bank of India.

The Contractor shall have the option to have the aforesaid recoveries commenced and / or completed earlier, and / or to have recoveries effected in instalments of higher amounts, and to repay part or whole of the advance by direct payment in advance rather than through on-account bills. The contractor shall ensure that the Bank Guarantee (in physical form or e-BG) or Insurance Surety Bond is valid and enforceable until the advance payment has been repaid. In case the Contract is terminated due to default of the Contractor or rescinded/ foreclosed, due to any other reason, the Contractor shall return the unrecovered amount of all advances within 15 days of issue of notice of termination/rescission/ foreclosure of the Contract, if the Contractor fails to do so due to any reason whatsoever, then he shall **pay interest at the prevailing one-year MCLR of the State Bank of India** prevailing on the date of issue of notice of termination/ rescission/ foreclosure shall be charged on the unrecovered amount of such advances from 16th day onwards compounded quarterly till the same is returned by the Contractor.

Interest in Case of Delay in Repayment of Advances : In case of a delay in the progress and/or completion of Work, as a result of which it is not possible for the Employer to recover the advance, before the original date of completion of Works stipulated in the Contract, then the interest to be charged from the Contractor on the remaining portion of the advance beyond such original completion date specified in the Contract, as detailed here under:

(i) "For period(s) for which "Extension of Time" has been granted under clauses (a) to (h) of clause 8.4.1, Interest shall be charged at State Bank of India's Marginal cost of fund based lending rate (MCLR) applicable of 1-year tenure, as prevailing on the last date of original time for completion specified in the contract".
(ii) "For all the other period(s) for which "Extension of Time" has been granted under clauses other than the clauses (a) to (h) of clause 8.4.1, Interest shall be charged at State Bank of India's Marginal cost of fund based lending rate (MCLR) applicable of 1-year tenure, as prevailing on the last date of original time for completion specified in the contract plus a penal interest of 3%".

Advances to be Used only for This Work. **11.2.5**

The advances shall be used by the Contractor strictly for the purpose of the Contract, and for the purpose for which they are paid. Under no circumstances, shall the advances be diverted for other purposes. Any such diversion shall be construed as a breach of the Contract and the Contractor shall be asked to return the advance at once and pay interest at 18% per annum till the advance is recovered back from him. The Contractor shall return the advance and pay the interests in one go without demur.
The Employer retains the right for any other remedy prescribed for breach of Contract in this regard.
The Contractor, if required by the Employer shall provide the details of Mobilization advance expended or to be expended.

Provisional Payment against Receipt of Materials at site/yard

11.3 Provisional Payment against receipt of Materials at site /Yard

Provisional Payment against receipt of Materials at site/yard shall not be paid. Unless otherwise specified in Special condition of Contract.

Measurement & Evaluation

11.4 Works to be Measured

The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 11.5.1 [Application for Interim Payment Certificates], 11.8[Statement on Completion] and 11.9 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

Whenever the Engineer requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

(a) promptly either attend or send another qualified representative to assist the Engineer in making the measurement, and
(b) supply any particulars requested by the Engineer.

If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Engineer shall be accepted as accurate.

11.4.1 Method of Measurement

Except as otherwise stated in the Contract and notwithstanding local practice:
(a) measurement shall be made of the net actual quantity of each item of the Permanent Works, and
(b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable contract document.

11.4.2 Evaluation

Except as otherwise stated in the Contract, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the Contract Price by evaluating each item of work applying the measurement agreed or determined in accordance with the above Sub-Clauses 11.4 and 11.4.1 and the accepted rate for the item.

Interim Payment Certificates

11.5 Interim Payment Certificates

Application for Interim Payment Certificates

11.5.1 The Contractor shall submit Statement in Two copies to the Engineer preferably after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents. The contractor shall submit supporting documents viz., Detailed measurements recorded in Measurement sheets, Abstract sheets along with recorded bill for the item actually executed including soft copy of the same for checking and payment.

The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

(a) Value of the Works executed.
(b) any amount to be deducted for retention in accordance with GCC Cl.11.7;
(c) any amounts to be added and/or deducted for 'Change in law' in accordance with Sub-Clause 11.1.1;

(d) Applicable Output GST. Declaration of the turnover of the previous bill in GSTR 1 and payment of taxes in GSTR 3B of the particular month is the evidence to be submitted as documentary proof of payment of taxes.
(e) Applicable Price variation,
(f) any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 17 [Claims and Disputes]; and
(g) the deduction of amounts certified in all previous Payment Certificates.
(h) Any other document specified in Special condition of Contract.

Issue of Interim Payment Certificates **11.5.2** Engineer shall, within 02 working days after receiving a Statement & supporting documents under sub-clause11.5.1, deliver to the Employer, with a copy to the Contractor, an Interim Payment Certificate for adhoc payment of 80% of bill value. Further, the Engineer shall, within 7 working days of receiving a statement and supporting documents, deliver to the Employer, with a copy to the Contractor, an Interim Payment Certificate showing the balance amount (i.e. 20%) which the Engineer fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Engineer on the Statement if any.

The Engineer may exclude any item certified in any previous interim payments or reduce the proportion of any item previously certified in any of the interim payments in light of any information provided at a later stage.

Where only a part of the payment applied for is disputed, payment certificate shall be issued for the undisputed amount.

The Engineer shall have the power to omit from any of the contractor's requests for payment the value of any work executed or Materials supplied or services rendered, with which he may for the time being be dissatisfied and for that purpose and for any other reason which to him may seem proper, may delete, correct or modify the sum(s) previously certified by him as being due to the Contractor.

Payment- Interim and Final **11.6** No amount will be paid until the Employer has received and approved the Performance Security. Also, no amount will be paid until the Employer has received the Mobilization advance utilization certificate from Contractor duly certified by the Engineer.

In case of joint venture following procedure will be adopted for payment

A) Invoicing: The invoice shall be raised by
i. the Joint venture
or
ii. the lead member provided such provision has been made in the JV/consortium agreement.

Payment: subject to (A)

i. Payment shall be made to Joint Venture
or
ii. to the lead member provided such provision has been made in the JV agreement
or
iii. To the JV members separately in their account provided such provision has been made in the JV/consortium agreement.

a) **Payment of IPCs**

(i) After scrutiny and certification by the Engineer for payment of 80% of bill value issued under sub-clause 11.5.2, the Employer within 04 working days shall make the payment for the certified value. The balance amount (i.e. 20%) shall be paid within 05 working days from the certification of interim payment certificate by the Engineer.

(ii) In the IPC, the contractor should certify that the amount received through IPC No. _____ for a value of Rs. _____ has not been diverted to other projects and the funds are fully utilised for execution of the subject contract. The copies of the supporting vouchers of the disbursement made by the Contractor should also be attached with the IPC.

(iii) In case the contractor diverts the funds from this work to other projects resulting in poor progress/mobilization of resources at work site, then the employer is at liberty to either have the jointly managed account or monitoring mechanism for contractor's Bank account.

(iv) For payment of the contractor's bills and such other payment releases, BMRCL, at its discretion, may adopt ESCROW mechanism of accounts, which shall be binding on the contractor.

b) Incorrect Measurements and Billing.

In the event of Contractor submitting incorrect measurements or bill for the first time, the Engineer will issue a written warning to him to the effect that the facility of 80% payment without detailed check will be withdrawn in future. If the contractor repeats the same, this 80% payment facility may be completely withdrawn in respect of this contract with BMRCL.

In addition, a penalty of Rupees one lakh shall be imposed for submission of the incorrect bill.

c) On-Accounts" Payments not prejudicial to final settlement.

"On-Accounts" Payments made to the Contractor shall be without prejudice to the final making up of the accounts (except where measurements are specifically noted in the Measurement Book as "Final Measurement" and as such have signed by the Contractor) and shall in no respect be considered or used as evidence of any facts stated in or to be inferred from such accounts nor of any particular quantity/quality of work having been executed nor the manner of its execution being satisfactory.

Payment made against any item doesn't necessarily mean acceptance are hundred percent with respect to quality of construction (as defects could arise later on), tests to be done may not have been undertaken due to whatever reason before release of payment

d) **Final Payment**

The Employer shall pay the amount certified in the Final Payment Certificate payable within 56 days from the date of issue of the Final Payment Certificate. Employer shall make the payment of applicable Output GST.

The Employer shall make Price Variation Payment

e) BMRCL is not liable to pay Interest, for any delay in payment/payments due to the contractor under this contract.

Retention Money **11.7**

11.7.1 Retention Money is the Security Deposit for the performance of the obligations of the contractor during the contract period.

i. From running account bills/IPCs the Employer shall deduct towards Retention money as an amount as stated in the 'Contract Data', subject to condition that maximum amount of Retention money shall not exceed as Stated in 'Contract Data'

Alternatively, the contractor may submit a Bank guarantee (in 'Physical form' or 'e-Bank Guarantee') or an Insurance Surety Bond equal to maximum amount of Retention money stated in above para along with 1st IPC so as to facilitate not to deduct retention money in each IPC.

ii. If the contractor chooses for recovery of money from IPCs, then, at the request of the contractor, the Employer shall exchange retention money held by him for a Bank Guarantee (in 'Physical form' or 'e-Bank Guarantee')/ Insurance Surety Bond of like amount.

iii. Whenever contract amount exceeds the contract price (as stated in LoA), retention money equal to 5 percent of the increased amount due to the Contractor will be deducted from subsequent IPCs. At the request of the contractor, the Employer shall exchange retention money held by him for a Bank Guarantee (in 'Physical form' or 'e-Bank Guarantee')/ Insurance Surety Bond of like amount.

iv. No retention money will be deducted against the Price Variation sums paid to the contractor.

v. The Retention money is held by the Employer without obligation to invest them or account for interest thereon or to place them in a designated account. No interest of whatsoever nature and type will be paid to the Contractor by the Employer in respect of Retention money.

vi. Bank Guarantee (in physical form or e-BG) or an Insurance Surety Bond shall be drawn in favour of Bangalore Metro Rail Corporation Limited and payable & extendable at a designated branch in Bangalore; in the prescribed form given in Contract Form-2/2A to Contract Forms. In case of Bank Guarantee, it shall be issued from an Indian Schedule bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule. In case of Insurance Surety Bond, tit shall be issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI). Retention Money BG/ Insurance Surety Bond shall be valid for a period of 6 months beyond the contract period and should be extended, as and when required by the Employer. The cost towards getting fresh BG/ Insurance Surety Bond or extension of BG/ Insurance Surety Bond will be borne by the contractor.

vii. In case contractor is a Joint Venture, then BG shall be submitted by any member or members of JV.

11.7.2 **Release of Retention Money**:

i. One half of the Retention money (Bank Guarantees and/or money) shall become due to the Contractor on the date of issue of the Taking Over Certificate for the whole of the works or the date of issue of last Taking over Certificate, if more than one Taking Over Certificate exist.

ii. One half of the balance of the Retention money (Bank Guarantees and/or money) shall become due to the Contractor on the date of issue of the Performance Certificate and the remainder shall become due to the Contractor upon final payment by the employer.

Statement at Completion **11.8**

Not later than 60 days after the issue of the Taking Over Certificate for the whole of Works, the Contractor shall submit, to the Engineer, six copies of a statement of completion with supporting documents, showing in detail, in the form approved by the Engineer under Sub-Clause 11.5:

(a) the final value of all work done in accordance with the Contract, up to the date stated in such Taking Over Certificate,
(b) any further sums which the Contractor considers to be due, and
(c) an estimate of amounts which the Contractor considers will become due to him under the Contract.
(d) As built drawings.
(e) 'Local content certificate' (if applicable) from the statutory auditor or cost auditor of the company (In case of companies) or from a practicing cost account or a practicing Chartered Accountant (in respect of suppliers other than companies) giving the percentage of 'Local Content' as per contract forms.

The estimated amounts shall be shown separately in such statement at completion. The Engineer shall certify payment under Sub-Clause 11.5.2.

Application for Final Payment Certificate **11.9** Not later than 60 days after the issue of the Performance Certificate, the Contractor shall submit to the Engineer six copies of a draft final statement with supporting documents showing in detail, in a form approved by the Engineer:

(a) the value of all work done in accordance with the Contract, and
(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.
(c) Applicable Output GST.
(d) Applicable Price Variation.

(e) The contractor to submit final bills along with 'as built drawings' (if not submitted as per clause 11.8) otherwise, final bills will not be entertained and final bills will be considered as incomplete and returned.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the Final Statement as agreed.

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Employer shall pay those parts of the draft final statement as certified by the Engineer as not being in dispute. The remainder of the dispute may then be resolved under Clause 17, in which case the Contractor shall then prepare and submit to the Engineer a Final Statement in accordance with the outcome of the dispute.

Discharge **11.10** When submitting the final statement, the Contractor shall submit a written discharge which confirms that the total of the Final Statement represents full and final settlement of all amounts due to the Contractor under the Contract. Such discharge may state that it shall become effective only after payment due under the Final Payment Certificate has been made and the Performance security referred to in Sub-Clause 4.2 has been returned to the Contractor.

Issue of Final Payment Certificate **11.11** The Engineer shall issue to the Employer, with a copy to the Contractor, the Final Payment Certificate within 28 days after receiving the Final Statement and written discharge in accordance with Sub-Clause 11.9 and 11.10 stating:

(a) the amount which is finally due, and
(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.

If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clauses 11.9 and 11.10, the Engineer shall request the Contractor to do so. If the Contractor fails to make such an application within a period of 28 days, the Engineer shall issue the Final Payment Certificate for such amount as he considers being due.

Notwithstanding anything contained herein the issue of Interim Payment Certificate / Final Payment Certificate would not restrict/hinder the right of the Employer under the law/Contract to recover from the Contractor any loss, damage, compensation arising out of fraudulent practice/corrupt practices indulged into by the Contractor prior to the execution of the Contract, during the execution of the Contract and after the completion of the Contract.

Notwithstanding anything contained herein, the issue of Interim Payment Certificate / Final Payment Certificate would not absolve the Contractor from any liability/loss/damage/ compensation towards the Employer under the law/Contract arising out of latent and hidden defects in the Works executed by the Contractor under the Contract.

Cessation of Employer's Liability **11.12** In respect of any matter or thing arising out of (or in connection with) the Contract or execution of the Works before the issue of the Taking Over Certificate for the whole of the Works, the Employer shall not be liable to the Contractor unless the Contractor shall have included a claim for it in his Statement at Completion described in Sub-Clause 11.8. For any such matter or thing arising after the issue of the Taking Over Certificate for the whole of the Works, the Employer shall not be liable to the Contractor unless the Contractor shall have included a claim for it in his Final Statement.

Calculation of Payments in Foreign Currency **11.13** All payments made by the Employer pursuant to the terms of the Contract shall be in the currency or currencies specified in the Contract. Wherever any sum in a foreign currency has to be converted into Indian Rupees for any purpose, the exchange rate to be employed for such conversion shall be the selling rate of exchange at the close of business of the State Bank of India 28 days before the date of submission of Tenders.

Round off **11.14** In every payment to the Contractor, sums of less than fifty paisa shall be omitted and sums of fifty paisa and more up to one rupee shall be reckoned as one rupee.

Payment by Cheque and E-Payment **11.15** All payments to the Contractor for the Rupee portion shall be made by RTGS (Real Time Gross Settlement)/crossed cheque. No cheque will be issued for an amount of less than Rs. 1000/-. This shall not apply to the final payment.

Tax Deduction at Source **11.16** Tax deductions will be made at source as per statutory requirement from every payment made to the Contractor at rates notified from time to time.

(a) Income tax deduction: Income Tax deduction shall be as per law.
(b) Labour Cess: The labour Cess will be deducted as per norms of applicable law from each IPCs/Final Bill and remitted to the concerned Authorities.
(c) Royalties: The contractor shall mandatorily submit Mineral Despatch Permits (MDP) from authorised Mines. Otherwise, the Royalty will be deducted from IPCs/Final bill as per prevailing notifications and remitted to the concerned Authorities.

Production of Vouchers **11.17**

i. The Contractor shall, whenever required by the Engineer, produce or cause to be produced for examination by the Engineer, any quotation, invoice, cost or other account books, vouchers, receipts, letters, memoranda or any copy of or extract from any such documents and also furnish information and returns, as may be required, relating to the execution of this Contract or relevant for verifying or ascertaining the cost of execution of this Contract or ascertaining the Materials supplied by the Contractor are in accordance with the Specifications laid down in the Contract. The Engineer's decision on the question of relevancy of any documents, information or returns shall be final and binding on the parties.

ii. If any part or item of the Work is allowed to be carried out by a Sub-Contractor, assignee or any subsidiary or allied firm, the Engineer shall have power to secure the books of such Sub-Contractor, assignee or any subsidiary or allied firm through the Contractor, and shall have power to examine and inspect the same. The above obligations are without prejudice to the obligations of the Contractor under any statute, rules or orders.

Withholding and Lien For Sums Claimed **11.18**

i. The Employer shall have lien on and over all materials of every description, tools, tackles, plant, equipment or any amount due and/or that may become due and payable to the Contractor under the Contract, and / or on and over the deposit of Performance Security or other amount or amounts made under the Contract and which may become payable to the Contractor. Employer may exercise a general lien also.

ii. And further, unless the Contractor pays and clears immediately on demand any claim of the Employer, the Employer shall at all times be entitled to deduct the amount of the said claim from the amount, securities and / or deposits which may have become or will become payable to the Contractor under the existing contract, or under any other Contract or transaction whatsoever between the Employer and the Contractor even if the matter stands referred to competent Court of Law. The Contractor shall have no claim for any interest or damage whatsoever in respect of any amounts withheld or treated as withheld under the lien referred to above and duly notified as such to the Contractor.

iii. Whenever any claim or claims for payment of a sum of money arise out of or under the contract against the Contractor, the Employer shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any, deposited by the Contractor and for the purpose aforesaid, the EMPLOYER shall be entitled to withhold the said Security Deposit or the security, if any, furnished as the case may be also have a lien over the same pending finalisation or adjudication of any such claim. In the event of security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the Employer shall be entitled to withhold and have a lien to the extent of such claimed amount or amounts referred to supra, from any sum or sums found payable or which at any time thereafter may become payable to the Contractor under the same contract or any other contract with the Employer or any Department of the Central and State Government pending finalisation or adjudication of any such claim. It is an agreed term of the contract that the sum of money or monies so withheld or retained under the lien referred to above, by the Employer will be kept withheld or retained as such by the Employer till the claim arising out of or under the contract is determined by the competent Court of Law as the case may be and that the Contractor will have no claim for interest or damage whatsoever on any account in respect of such withholding or retention under the lien referred to Supra and duly notified as such to the Contractor. For the purpose of this clause, where the Contractor is a partnership firm or a limited company, the Employer shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner limited company, as the case may be whether in his individual capacity or otherwise.

iv. Amount due for recovery on account of hire charges of Employer's Machinery and other facilities (if provided) as also for other services and electricity charges and expenditure, if any, incurred by the Employer on Contractor's behalf on labour, materials and equipment which may become due from the Contractor as per terms of this contract as well as under any other prevailing laws will be recovered from the payments to the Contractor as and when due.

Signature on Receipts For Payments	**11.19**	Every receipt of payment to Contractor including refund of the Performance Security shall be signed by the person authorized to do so on his behalf. In the event of death of any of the Contractor's partners in case the Contractor is a partnership firm, during the currency of the Contract, it is hereby expressly agreed that every receipt by any one of surviving Contractor's partners, shall, if so signed as aforesaid, be a good and sufficient discharge as aforesaid, provided that nothing in this Clause shall be deemed to prejudice or affect any claim, which the Employer may hereafter have against the legal representatives of any Contractor's partner so dying, for or in respect of breach of any of the conditions of the Contract. Provided also that nothing contained in this clause shall be deemed to prejudice or affect the respective rights and obligations of the Contractor's partners, or of the legal heirs / representatives of any deceased Contractor / partner interest
Post Payment Audit	**11.20**	It is an agreed term of the Contract, that the Employer reserves to himself the right to carry out a post payment audit and / or technical examination of the Works, and the Final bill including all supporting vouchers, abstracts, etc., and to make a claim on the Contractor for the refund of any excess amount paid to him, if as a result of such examination, any over-payment to him is discovered to have been made in respect of any work done or alleged to have been done by the Contractor, under the Contract. If any under-payment is discovered, the same shall be paid by the Employer to the Contractor. Such payments or recoveries, however, shall not carry any interest.
Recovery of money due to the Employer	**11.21**	All damages (including, without limitation, Liquidated damages), costs, charges, expenses, debts, or sums for which the Contractor is liable to the Employer under any provision of the Contract may be deducted by the Employer from amount due to the Contractor under the Contract including, without limitation, and the Employer shall have the power to recover any balance not so deducted from amount due to the Contractor under any other contract between the Employer and the Contractor. When the Contractor has assigned to a third party the right to receive amount due, or, to become due, under the Contract to the Contractor or charged such amount in favour of a third party, the Employer's right to deduct damages (including without limitation Liquidated damages), costs, charges, expenses, debts or sums for which the Contractor is liable to the Employer from amount due to the Contractor under the Contract shall be limited to the right expressed above.
	12	**Variations**
Right to Vary	**12.1**	All Variations shall be recorded in a written instruction from the Engineer either as a Contractor's Variation or as an Employer's Variation, and shall not be implemented by the Contractor without such an instruction in writing from the Engineer. No Variation shall in any way vitiate or invalidate the Contract. The Contractor shall not make any alteration and/or modification of the Works, unless and until the Engineer instructs or gives consent to a Variation. If the Construction and/or Manufacture Documents or Works are not in accordance with the Contract, the rectification shall not constitute a Variation.
Contractor's Variations	**12.2**	**Value Engineering or Innovation**
Value Engineering Proposals	**12.2.1**	The Contractor may submit to the Employer, in writing at his own cost, value engineering proposals for modifying the Employer's Requirements provision of additional land, access or feasibility over and above that is provided in the Contract for the purpose of saving in time, construction or manufacture costs. The value engineering proposal shall not impair the essential character, functions or characteristics or the Work, including service life, economy of operation, ease of maintenance, desired appearance, or Design and safety standards.

The Contractor shall provide his value engineering proposal in a time limit prescribed by the Engineer. The Engineer's decision in this regard shall be communicated to the Contractor within a reasonable period of time. If by any reason the time limit specified by the Engineer is exceeded, the proposal may not be considered.
The decision of the Engineer in this regard shall be final and binding.

Value Engineering Proposals – Contents **12.2.2** If the Employer requires or accepts it, and if the Contractor wants to proceed with the proposal, the Contractor must provide (at no cost to the Employer) a detailed report prepared by a consultant acceptable to the Employer and which shall include:

a. a general description of the original Contract requirements for the Works and the proposed changes
b. any detail of all the proposed modifications to the drawings and specifications
c. any detail of all Work and goods affected by the value engineering proposal
d. a detailed estimate of the construction cost based on the original Contract requirements and based on the proposed changes
e. any resultant time extensions or reductions for the Contract
f. statement to the extent of minimum saving expected. The Contractor's cost of preparing value engineering proposal shall be excluded in determining the estimated net savings in construction costs.

Value Engineering Proposals- Employer Review **12.2.3** The Employer may in his sole discretion, accept or reject the value engineering proposal or any part thereof and determine the estimated net saving in the construction cost. The Employer shall not be liable for delays or damages to the Contractor due to any failure of the Employer to accept or act upon any value engineering proposal submitted pursuant to this Clause. If the submitted value engineering proposal is similar to a change / variation already under consideration by the Employer, the Employer may make such changes without respect to the value engineering proposal.
Once, the Employer or the Engineer rejects the value engineering during proposition due to any reason, it shall not be pursued by the Contractor in any other form.

Amendments- Employer Issuance **12.2.4** If the value engineering proposal is acceptable to the Employer in whole or in parts, it will accept by execution of an amendment. Such amendment shall identify all the changes in the specifications, Contract Period etc., shall specify net savings on construction costs and shall provide that the Contractor be paid 30% of saved net savings amount based on the difference between the amount contained in the Contract and the estimated net savings both as determined by the Employer.

Contractor's Acceptance and Payment **12.2.5** The Contractor shall either accept or reject any proposed amendment executed by the Engineer pursuant to this section within 5 working days of its receipt date from the Employer. If the Contractor does not reject the same in the period stipulated above, the amendments shall be deemed to be accepted by the Contractor and shall become a variation to the Contract. The Contractor's acceptance shall be unconditional and compensation of 30% of the value shall constitute the full compensation. The Contractor will be paid this 30% or less but not more at the time of final payment on Engineer's certification that the net savings as intended by value engineering have been achieved.

Employer's Variations **12.3** "Employer's Variation" means a change in the Employer's Requirements which makes necessary alteration or modification of the Design, quality or scope of Works as described by or referred to in the Employer's Requirements. Changes to any sequence, method or timing of construction, manufacture, testing and Commissioning and changes to any part of the Site or the work area or access thereto will not constitute Employer's Variation.

An Employer's Variation shall be requested and implemented in accordance with and subject to the following provisions:

(a) If the Employer requests for Variation, the Contractor shall submit following details at his own cost within 14 days or within the period as specified by the Engineer;

(i) a description of the proposed work to be performed and a programme for its execution.
(ii) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 4.13, and Key dates.
(iii) the Contractor's proposal for adjustment to the Contract Price.

(iv) effect on the warranties of the Contractor set out in GCC Clause 4.2

The contractor shall furnish sufficient information in terms of rates/prices of the equipment/components manufactured by the Contractor or sourced from the Vendors/Sub-contractors such as: estimated man-hours, man-hours rates for manufactured items, design costs, basic rate of materials, sub-assemblies, taxes, duties, overheads & profits and inflation rate, so as to establish the reasonableness of the variation price.

The decision of the Employer in regard to consider it as Employer's variation or not is final and binding on the contractor.

(b) any agreement between the Engineer and the Contractor as to the terms upon which an Employer's Variation may be implemented shall have no contractual or other legal effect, until it is in writing and is signed by the Contractor and the Engineer. The Engineer before signing such agreement shall take prior approval of the Employer. The terms of this agreement will be binding upon the Contractor and the Employer. This agreement shall determine the amount which should be added to or deducted from the relevant schedules in-pricing document and/or the revisions (if any) which should be made to the Payment Schedules as a result of the Variation.

In the event of the Engineer and the Contractor failing to reach agreement on the revisions to be made to the schedules in pricing documents the Engineer shall, with the approval of the Employer, determine the amount which should be added or deducted from the relevant schedules amount which shall be binding on the Contractor. In case the Contractor supplies part/ incomplete information or refuses to supply the required information, the Employer shall determine the cost of Variation based on the information available to him from any sources which in his judgment can be used to determine the case. The Contractor will proceed with the Work on this basis but may submit his Claim if necessary.

In assessing work covered by any sub-contract, the Engineer will have, where he deems necessary, access to the original sub-contract conditions, rates, prices and details of the variation claimed, to assist in evaluating any Variations.

(c) If the Engineer withdraws the request for an Employer variation, the contractor shall have no claim of any kind whatsoever arising out of or in connection with any of the proposal made or any failure to reach agreement in case the Employer's variation involves omission of part of the works the agreement shall address the issue of reduction in the Contract Price.

12.3.1 Variation in Quantity of Items Covered by the Bill of Quantities

The quantities of items shown in the Bill of Quantities are approximate, and liable to vary during the actual execution of the Work. The Contractor shall be bound to carry out and complete the stipulated work, irrespective of the magnitude of the variations in individual items specified in the Bill of Quantities. Also, Employer does not guarantee work under every item of Bill of Quantities (BOQ).

Such variations in quantities shall be paid for in the manner laid down below;

I. The accepted variation in quantity of each individual item of the contract would be up to 25% of the quantity (on Plus side) originally contracted, except in case of foundation work (in which no variation limit shall apply). However, the rates for the increased quantities shall be as per Sub- para III below.

II. The Contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever upto the limit of 25% variation in quantity of individual item of works. In case of variation in quantity on minus side, rates will be payable at the accepted rates of the contract for the executed quantities.

III. In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, then same shall be executed at following rates;

a. Quantities operated in excess of 125% but upto 140% of the agreement quantity of the concerned item, shall be paid at 98% of the rate awarded for that item in that particular tender.

b. Quantities operated in excess of 140% but up to 150% of the agreement quantity of the concerned item shall be paid at 96% of the rate awarded for that item in that particular tender.

c. Variation in quantities of individual items beyond 150% shall be paid at 96% of the rate awarded for that item in that particular tender.

d. Variation to quantities of Minor Value Item: The limit for varying quantities for minor value items shall be 100% (as against 25% prescribed for other items). A minor value item for this purpose is defined as an item whose original agreement value is less than 1 % of the total original contract value.

(i) Quantities operated upto and including 100% of the agreement quantity of the concerned minor value item, shall be paid at the rate awarded for that item as per accepted rate;

(ii) Quantities operated in excess of 100% but upto 200% of the agreement quantity of the concerned minor value item, shall be paid at 98% of the rate awarded for that item as per accepted rate;

(iii) Variation in quantities of individual minor value item beyond 200% shall be paid at 96% of the rate awarded for that item as per accepted rate.

IV. In case of earthwork items, the variation limit of 25% shall apply to the gross quantity of earthwork items and variation in the quantities of individual classifications of soil shall not be subject to this limit.

12.3.1.1 BOQ Schedule pertaining to COMMON Schedule of Rates (SR) Published by KPWD

If any work item is not included as an itemized entry in any of the Bill of Quantities (BOQ) schedules of the tender or contract, but is available in the Common Schedule of Rates (SR) of KPWD, the rate for such item shall be derived from the corresponding rate specified in the *Common SR for Engineering Departments* published by KPWD under the schedule titled *"Items under Schedule of Rates Published by KPWD."* The contractor's quoted percentage (if any) shall then be applied to arrive at the payable rate.

Variations in quantities and/or items under this Schedule shall be considered based on the cumulative value for the schedule exceeding the earmarked amount by more than twenty-five percent (25%) on the positive side. All such variations shall be valued and paid strictly in accordance with the provisions of GCC Clause 12.3.1.1.

12.3.2 Rates for Extra items of work / Non-Tender Items

The Contractor on receipt of instructions from the Engineer shall be bound to carry out extra item(s)/ non-tender items of work ordered as variation. The Contractor shall give a notice to the Engineer at least 7 days before the need for their execution arises.

The rates for such extra items / Non-tendered items of work (for which the Contract does not contain any rates or prices applicable to such items of works and if such item/items are not available in schedule 'ITEMS UNDER SCHEDULE OF RATE PUBLISHED BY KPWD') shall be finalized by negotiation between Engineer and the Contractor considering derived rates in following order of priority:

(i) Derived rates worked out based on accepted rate(s) of similar or nearly similar item(s) available in the BoQ of this Contract with price variation till the date of variation proposal.

(ii) Derived rates worked out based on at par rate(s) of similar/nearly similar item(s) from prevailing Common SoR published by KPWD for Engineering Departments.

(iii) Derived rates shall be determined based on the accepted rates of similar or nearly similar items included in the Bills of Quantities of other BMRCL contracts, by adopting the arithmetic average of the accepted rates of the contracts not older than 3 years taken into consideration.

(iv) Derived rates worked out based on at par rate(s) of similar or nearly similar item(s) of prevailing CPWD SoR as applicable to Bangalore.

(v) In case derivation of rates is not possible as per (i) to (iv) above, the rate(s) may be decided by making a rate analysis considering following:

a. Cost of material (excluding input GST) at current market rates, as required in the final finished permanent work, including a reasonable percentage for wastage and transportation.
b. Cost of temporary works if any (unless provided for separately) minus salvage value of serviceable material released after completion of temporary work and duly adjusted cost of material realized for secondary use / scrap.
c. Cost of labour used at the site of work adopting rates under payment of Minimum Wages Act for the area of work, for each category of worker.

d. Hire charges for plant and machinery, scaffolding, shuttering, forms, etc., required to be used at the site of the work. The tools used by various trades shall not be counted as plant and machinery for this purpose.
e. An amount of 15% of items (a), (b), (c) and (d) above to allow for contractor's overheads, and profits. This percentage shall not apply to estimated cost of materials supplied free to the contractor.

Rates for higher/lower grade of concrete can be derived by adding for extra or by deducting for the less for the cost of the constituent components from the accepted rates in the BOQ.

Variation Procedure **12.4** The Engineer shall, as soon as practicable after receipt of proposals under sub-clauses 12.2 and/or 12.3, respond with approval, rejection or comments.

After receipt of proposal, it will be the prerogative of the Employer, whether to instruct and proceed ahead with the variation or drop the proposal in part or full. In that case, no cost of preparing and submitting the proposal will be payable to Contractor.

If the Engineer instructs or approves a Variation, he shall proceed in accordance with Sub-Clause 3.5 to agree or determine adjustments to the Contract Price, Time for Completion.

Payment in Applicable Currencies **12.5** If the Contract provides for payment of the Contract Price in more than one currency, and an adjustment is agreed or fixed as stated above, the amount payable in each of the applicable currencies shall be specified when the adjustment is agreed or fixed. In specifying the amount in each currency, the Contractor and the Engineer (or, failing agreement, the Engineer) shall take account of the actual or expected currency proportions of the Cost of the varied work, without being bound by the proportions of various currencies specified for payment of the Contract Price.

13 Determination/Termination of the Contract

Notice to Contractor **13.1** **Right of Employer to determine the Contract**

The Employer shall be entitled to determine/terminate the contract at any time should, in the Employer's option, the Cessation of work become necessary owing to paucity of funds or from any other cause whatsoever, in which case the value of approved materials at site and work done to date by the Contractor will be paid for in full at the rate specified in the contract. Notice in writing from the Employer of such determination and the reasons therefore shall be conclusive evidence thereof.

Payment on determination of Contract by Employer.

(i) Should the contract be determined under Sub-Clause 13.1 and the Contractor claims payment for expenditure incurred by him in the expectation of completing the whole of the works, the Employer shall admit and consider such claims as are deemed reasonable and supported by voucher to the satisfaction of the Engineer. The Employer's decision on the necessity and propriety of such expenditure shall be final and conclusive.

(ii) The Contractor shall have no claim to any payment of compensation or otherwise, howsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of determination of contract.

Notice to Contractor due to default of contractor **13.2** If the Contractor fails to carry out any of his obligations, or if the Contractor is not executing the Works in accordance with the Contract, the Engineer may give notice to the Contractor requiring him to make good such failure and remedy the same within such time as the Employer / Engineer may deem to be reasonable.

Conditions Leading To termination of Contract **13.2.1** The Employer shall be entitled to terminate the Contract if the Contractor or any one of its constituents,

a) fails to comply with a notice under Sub clause 13.2 above.
b) abandons or repudiates the Contract
c) without reasonable excuse acceptable to the Engineer, fails to commence the Works in accordance with the Contract
d) Sub-contracts the whole of the Works or goes beyond the permitted limit as given in the General Conditions of Contract Clause 4.5 or assigns the Contract without approval of the Employer.
e) becomes bankrupt or insolvent or goes into liquidation except voluntary liquidation for the purpose of amalgamation or reconstruction
f) persistently disregards instructions of the Engineer or contravenes any provisions of the Contract, or
g) fails to adhere to the agreed programme of work on review weekly / fortnightly / monthly basis by margin of 10% or 60 days, whichever is earlier or fails to complete the Works or parts of the Works within the stipulated or extended period of completion, or is unlikely to complete the whole Work or part thereof within time because of poor record of progress; or
h) fails to remove materials from the Site, or pull down and replace work, after receiving notice from the Engineer to the effect that the said materials or Works have been condemned or rejected, or
i) fails to take steps to arrange and/or augment machinery, tools, plant and or equipment employ competent and/or additional staff and labour, or
j) fails to afford the Engineer or his representative proper facilities for inspecting the Works or any part thereof, or
k) Indulges in corrupt or fraudulent practices as explained in Clause 4.33.1.
l) Diversion of advances as explained in Clause 11.2.5.

In any one of the above events or circumstances, the Employer may upon giving 14 days' notice to the Contractor, terminate the Contract in whole or in parts in so far as it is practicable to do so and expel the Contractor from the Site for that portion of the Work which is terminated. However, in case of sub-paragraph (e) or (k), the Employer may by notice terminate the Contract immediately, viz. within 24 hours.

The Employer's decision to terminate the Contract shall not prejudice any other rights of the Employer under the Contract.

Right of Employer on Termination of contract due to default of Contractor **13.2.2** In the event of any or several of the courses, referred to in Sub-Clause (13.2.1) being adopted:

(a) The Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and Contractor shall not be entitled to recover or be paid any sum for any work thereto for actually performed under the contract unless and until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the Contractor shall only be entitled to be paid the value so certified.

(b) In the contract which has been terminated as a whole, the Retention Money already with BMRCL under the contract shall be encashed/ forfeited and the Performance Guarantee already submitted for the contract shall be encashed. After termination, the Employer may complete the works and/ arrange for any other entities to do so, in any manner whatsoever or by adopting any means whatsoever, as decided by the Employer. The Employer and his entities may then use the roads, the Contractor's documents and his Design document made by or on behalf of the Contractor. The balance work shall be got done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm. Further the authorized representative of failed Contractor cannot be accepted as authorized representative in new contract.

(c) In the contract terminated in part or parts,

(i) The Performance Guarantee proportionate to the extent of the terminated part or parts of the 'part terminated' contract with reference to the contract price as mentioned in LOA shall be encashed/ forfeited. The contract value of part terminated contract stands reduced to the balance value of work under the contract.

(ii) The Retention Money of part terminated contract shall not be encashed/ forfeited.

(iii) The defaulting Contractor shall not be issued any completion certificate for the contract.

(iv) After termination, the Employer may complete the works and/ arrange for any other entities to do so, in any manner whatsoever or by adopting any means whatsoever, as decided by the Employer. The Employer and his entities may then use the roads, the Contractor's documents and his Design document made by or on behalf of the Contractor. The balance work shall be got done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.

(v) Further the authorized representative of failed Contractor will not be accepted as authorized representative in new contract.

(d) The Engineer or the Engineer's Representative shall be entitled to take possession of any materials, tools, implements, machinery and buildings on the works or on the property on which these are being or ought to have been executed, and to retain and employ the same in the further execution of the works or any part thereof until the completion of the works without the Contractor being entitled to any compensation for the use and employment thereof or for wear and tear or destruction thereof.

(e) The Engineer shall as soon as may be practicable after removal of the Contractor fix and determine ex-parte or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount (if any) had at the time of termination of the contract been reasonably earned by or would reasonably accrue to the Contractor in respect of the work then actually

done by him under the contract and what was the value of any unused, or partially used materials, any constructional plant and any temporary works upon the site. The legitimate amount due to the Contractor after making necessary deductions and certified by the Engineer should be released expeditiously.

Non-exercise of power not to constitute waiver **13.2.3** Provided always that in case any of the powers conferred upon the Employer by Sub-clause 13.2 and Sub Clause 13.2.1above, shall have become exercisable, and the same may not have been exercised, the non-exercise thereof shall not constitute waiver of any of the conditions thereof.

13.3 Termination by Contractor

Default of Employer **13.3.1** In the event of the Employer becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or Amalgamation, then, the Contractor may give notice requiring the Employer to remedy the default within 28 days after receipt of the notice. If the Employer fails to remedy the default or fails to propose steps reasonably acceptable to the Contractor to do so and in that case, the Contractor may terminate the Contract after issue of 14 days' notice to the Employer with a copy to the Engineer. In this case, the Contractor shall be compensated as per Sub Clause no.13.3.4.

The Engineer's decision on the amount payable on this account shall be final and binding.

Contractor's Entitlement to Suspend the Work **13.3.2** If the Contractor suspends work or reduces the rate of progress of work in accordance with the provisions of this Sub-Clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under sub-clause-8.4.

Cessation of Work by Contractor **13.3.3** After termination under Sub-Clause 13.3, the Contractor shall:

a. ceases all further work, except for such work as may be necessary and instructed by the Engineer for the purpose of making safe or protecting those parts of the Works already executed, and any Work required to leave the Site in a clean and safe condition,
b. hand over all Construction and/or Manufacture Documents, Plant and Materials for which the Contractor has received payment,
c. hand over those parts of other Works executed by the Contractor up to the date of termination, and
d. removes all Contractor's Equipment which is on the Site and repatriate all his staff and labour from the Site.

Any such termination shall be without prejudice to any other right of the Contractor under the Contract.

Payment on Termination **13.3.4** After termination under Sub-Clause 13.3.1 the Employer shall return the Performance Security, and shall pay the Contractor an amount calculated and certified in accordance with the following conditions:

a The value of approved materials actually brought to the site and reasonably required to execute the works during next three months, as per approved programme, and
b Value of work completed up to date by the Contractor at rates specified in the Contract, after taking into account any deductions, retentions, setoff.
c In addition a sum not exceeding 2% (two percent) of the value of the work remaining incomplete on the date of Termination notice taking effect.

The payment as above are full compensation for termination under this clause and the Contractor has no claim for damages or other entitlements whether under the contract or otherwise.

13.3.5 In case of termination/ foreclosure of the Contract under whatsoever circumstances, any remaining tools, plants, equipment's and surplus materials of the Employer with the Contractor will be returned to the Employer at Employer's depot at the Contractor's cost. In case of the failure of the Contractor to do so, the Employer will be entitled to recover their cost from the Contractor from the amount becoming due to the Contractor or from any other amount due in any other contracts. The decision of the Engineer of the amount to be recovered will be final decision and full credit at rates initially charged to the Contractor shall be allowed for such materials. Similarly the Employer shall be entitled to recover the cost of the unreturned material, plants, equipment and tools from the Contractor, where such material have been supplied free of cost and plants ,equipment and tools, free of cost or on lease basis to the Contractor as stipulated in the Contract.

Survival **13.4** Termination of this Contract

a. shall not relieve the Contractor or the Employer of any obligations already incurred hereunder which expressly or by implication survives Termination hereof and
b. except as otherwise provided in any provision of this Contract expressly limiting the liability of either party, shall not relieve either party of any obligations or liabilities for loss or damage to the other Party arising out of or caused by acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

14 Risk and Responsibility

Indemnity **14.1** The Contractor shall indemnify and hold harmless the Employer, the Engineer, the Designated Contractors, representatives and employees from and against all actions, suits, proceedings, claims, damages, losses**,** expenses and demands of every nature and description**,** by reasons of any act or omissions of the Contractor, his representative or his employees in the execution of the Works, including professional services provided by the Contractor or in the guarding the same.
These indemnification obligations shall include but not be limited to claims, damages, losses, damage proceedings, charges and expenses which are attributable to:

(a) sickness, or disease, or death of, or injury to any person; and
(b) loss of, or damage to, or destruction of any property (other than the Works) including consequential loss of use; and
(c) Loss, damage or costs arising from the carriage of Plant and Materials and/or ownership or chartering of marine vessels by the Contractor, or any sub-contractor of any tier.

The Contractor shall also indemnify and save harmless the Employer from and against all claims and proceedings on account of infringements of patents rights, design, trademark name etc. as detailed out in Sub Clause 5.8.

All sums payable by way of compensation under these conditions shall be considered reasonable compensation payable to the Employer, without reference to the actual loss or damage sustained, and whether or not any damage shall have been sustained. The decision of the Engineer as to compensation claimed shall be final and binding.

Contractor's Care of the Works **14.2**

The Contractor shall take full responsibility for the care of the Works, or any part thereof, including full responsibility for the care of any work being manufactured, or stored off-Site for inclusion in the Works, or in the course of transportation to the Site, and for the care of Contractor's Equipment, Temporary Works, Plant and any other Material, whatsoever, on the Site or delivered to or placed on the Site in connection with, or for the purpose of the Works.

The Contractor shall take this responsibility from the Commencement Date until the date of issue of the Taking Over Certificate, when responsibility shall pass to the Employer. If the Engineer issues a Taking Over Certificate for any Section or part of the Works, the Contractor shall cease to be responsible for the care of that Section or part from the date of issue of such Taking Over Certificate when responsibility shall pass to the Employer.

The Contractor shall take responsibility for the care of any outstanding work which is required to be completed prior to the expiry of the Contract Period, until the Engineer confirms in writing that such outstanding work has been completed. If any loss or damage happens to the Works, any other property or person, arising from any cause other than the Employer's risks listed in Sub-Clause14.3, during the period for which the Contractor is responsible, the Contractor shall rectify such loss or damage, at his cost, so that the Works conform with the Contract or at the option of the Employer, will pay or allow to the Employer the cost of rectifying such loss or damage. Notwithstanding such loss or damage, the Contractor shall proceed with the execution of Works in all respects in accordance with the Contract and the Engineer's instructions. The Contractor shall also be liable for any loss or damage to the Works caused by any operations carried out by the Contractor after the date of issue of the Taking Over Certificate.

Employer's Risks **14.3**

The Employer's risks of loss or damage to physical property in India and of death and personal injury occurring in India in consequence of the performance of obligations under the Contract are:

(a) War, hostilities (whether war be declared or not), invasion, act of foreign enemies, act of terrorism.
(b) rebellion, revolution, insurrection, or military or usurped power, or civil war, within India,

(c) riot, commotion or disorder by persons unless solely restricted to or caused by employees of Contractor or of sub-contractors currently or formerly engaged in the Works,
(d) Ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the Contractor may be responsible for the use of any radio-active material, Pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds, and use or occupation by the Employer of any part of the Works, except as may be specified in the Contract.

Consequences of Employer's Risks **14.4**

If an Employer's risk results in loss or damage, the Contractor shall promptly notify the Engineer and shall rectify this loss or damage to the extent required by the Engineer.

If the Contractor suffers delay and/or incurs cost from rectifying this loss or damage, the Contractor shall give notice to the Engineer and shall be entitled to claim:

(a) Extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4, and
(b) Amount of such cost, which shall be added to the Contract Price.

Contractor's Risks **14.5** The Contractor's risks are all risks other than the Employer's risks given in sub-clause14.3.

Limitation of Liability

Except as provided otherwise in these Conditions, neither party shall be liable to the other party for loss of use of any Works, loss of profit, loss of any Contract or any other indirect or consequential loss or damage which may be suffered by the other party in connection with the Contract. The total liability of the Contractor to the Employer under the Contract shall not exceed the Contract Price. Except that this Sub-Clause shall not limit the liability of the Contractor:

(a) under Sub-Clauses 4.18,4.19,5.7,7.10, 7.11, and 8.6
(b) under any other provisions of the Contract which expressly impose a greater liability,
(c) in cases of fraud, wilful misconduct or illegal or unlawful acts, or
(d) in cases of acts or omissions of the Contractor which are contrary to the most elementary rules of diligence which a conscientious Contractor would have followed in similar circumstances.

15. Insurance.

Professional Indemnity Insurance **15.1** The Contractor shall effect and maintain Professional Indemnity Insurance, preferably in the name of BMRCL, for the amount in Indian Rupees stipulated in 'Contract data' In respect of any design of the Works to be carried out by or on behalf of the Contractor. This insurance, which shall ensure the Contractor's liability by reason of professional negligence and errors in the design of the Works, shall be valid from the date of commencement of Works, until 5 years after the date of issue of Performance Certificate.

Alternatively, the Contractor shall renew the insurance before the expiry of the Yearly Insurance in such a way that the entire validity period is covered.
The Engineer will not issue Final Payment Certificate until the Contractor has produced evidence that coverage of the Professional Indemnity Insurance has been provided for the aforesaid period.

Injury to third party personnel and Property of third party/ies **15.2** The contractor shall be liable for and shall indemnify the Employer (principal) against any liability, loss claim or proceedings whatsoever arising under any statute or at common law in respect of personal injury to or the death of any person whosoever arising out of or in the course of or caused by the carrying out the contract works, unless due to any act or neglect of the Employer (principal).

The contractor shall be liable for and shall indemnify the Employer(Principal) against any expenses, liability, loss, claim or proceedings in respect of any injury or damage whatsoever to any property real or personal in so far as such injury or damage arises out of or in the course of or by reason of the carrying out of the contract works, and provided always that the same is due to any negligence, omission or default of the contractor, his servants or agents of any sub-contractor, his servant or agent.

Insurance Against Injury to Persons and Property. **15.3** Without prejudice to his liability to indemnify the Employer (Principal), the contractor shall take all types of insurance policies such as Contractors All Risks and Workmen's Compensation (Employers Liability) Policy at his cost in the JOINT NAMES OF THE EMPLOYER (PRINCIPAL) AND CONTRACTOR AND SUB CONTRACTOR, IF ANY and maintain such policies throughout the period of contract works.

Such insurance as are necessary to cover the liability of the contractor or as the case may be of such Sub-Contractor in respect of personal injuries or death of workmen engaged by the contractor or sub-contractor, arising out of or in course of or caused by carrying out of work.

The contractor at his cost shall maintain in the joint names of the Employer (principal) and contractor such insurances as may be required in respect of any expenses, liability, loss, claim or proceedings which the Employer (principal) may incur or sustain by reason of injury or damage to property real or personal arising out of or in the course or by reason of the carrying out the work, and caused otherwise than by the negligence, omission or default of the contractor, his servants or agents or any sub-contractor, his servants or agents.

Any such insurance policy or policies or receipts effected shall have to be submitted in original with the Employer (principal).

Insurance of the contract works under a Contractors All Risks Insurance Policy. **15.4**

The contractor at his cost shall in the JOINT NAMES OF THE EMPLOYER (PRINCIPAL) AND CONTRACTOR:

i. Insure the plant, material and works forming part of the contract works against loss or damage by all types of risks as envisaged under the standard Contractors All Risks policy.
ii. obtain the insurance policy for the full replacement cost at site of the contract works entrusted to the contractor, sub-contractor.
iii. Include in the insurance policy the cost of demolition works if any.
iv. Ensure that the policy shall remain in force till the entire contract works is completed and the Taking Over Certificate issued.

The Contractors All Risks policy which is an All Risks policy with only named exclusions normally extends cover for loss or damage caused by fire, storm, tempest, lightning, flood, aircraft or anything dropped there from, aerial objects, riot and civil commotion, defective materials, defective workmanship, etc. and shall be extended to cover the following:

a. earthquake risks
b. terrorism
c. Third Party Liability including Cross Liability to the extent of at least 10% of the contract works.
d. Debris removal (of insured property) to the extent of at least Rs. 50 lakhs
e. Owners (Principal`s) surrounding property to the extent of 10% of the policy limits.
f. Defect Liability for a period of 12 months from the date mentioned in the taking over certificate for the whole of the works.

Contractor's plant & machinery. **15.5**

All the Contractor's Plant, Equipment & Materials shall be brought and kept at the Facilities Site at the sole cost, risk and expense of the Contractor. The Employer shall not be liable for any loss or damage thereto until the completion of work or removal of materials, plant & machinery, whichever is later. The Contractor, at its sole cost, shall maintain adequate, appropriate and prudent insurance with respect thereto. Any insurance policy carried by the Contractor, any Subcontractor or any third party on the Contractor's Equipment shall provide for a waiver of the underwriter's right to subrogation against the Employer, the Lenders, affiliates, employees, insurers and underwriters. The Contractor shall obtain adequate insurance to cover all equipment, tools and the Constructional Plants rented or leased from third parties.

The Contractor shall obtain insurance for all plant & equipment and materials whether at Site as aforementioned or whether in transit or in storage awaiting shipment to the Site, including erection/re-erection and testing at site and subsequent operation and until their removal from site.

The policy shall be on floater basis which provides usage of the plant & machinery at different project sites, including Earthquake, Terrorism, underground works, third party liability including cross liability for not less than10% of the total value of plant & machinery. The policy should also cover clearance and removal of debris for not less than 10% of the claim amount, any other relevant add on cover. Plant and Machinery brought to the site in semi or completely knocked down condition is to be insured under the storage cum erection All Risks policy. Once assembled and put to use and which are in readiness for operation are to be insured under the contractor's plant & machinery insurance policy. The policy shall be obtained in the joint name of the Principal i.e. BMRCL and the contractor.

The contractor before commencing the contract shall file with BMRCL the list of the Plant & machinery that would be in use at the project site, their make, model, year of manufacture, current cost of replacement and the insurance shall be availed based on the list so submitted.

Workmen Compensation (Employers Liability) Insurance **15.6**

Workman's compensation policy with the following endorsement no.140 to protect Employer (Principal) interest.

"It is hereby understood and agreed that in the event of any workman employed by the within named insured or any dependent of such workman bringing or making a claim under Section 12 of the Workmen's Compensation Act 1923, and subsequent amendments of the said Act against ……for personal injury or disease sustained whilst at work on any contract covered by the terms and conditions of the within policy which the Insured may be carrying out for the said…….the Company will indemnify the said…….against such claim and/or any costs, charges and expenses in respect thereof Provided always that the Company shall not be liable hereunder unless the Company have the sole conduct and control of all claims covered by this endorsement. Nothing in this endorsement shall be construed as affecting the Insured's title to recover damages under any other Section of the said Act."

The policy shall be:

a. In the joint names of the Employer(Principal), contractor and sub-contractor
b. for the declared wages and emoluments as per standard terms of the policy.
c. cover all the workmen of the contractor and sub-contractor
d. in force till the completion of the work
e. include cover for medical expenses incurred on account of an accident or injury sustained by the workmen in the course of and during the employment
f. include cover for Liability as per Fatal Accidents Act and Common Law.

General requirements for insurances **15.7**

The Contractor shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the Employer:

(a) evidence that the insurances described in this Clause have been effected, with an Insurance Company operating in India.
(b) Submit the original of the policies with the Employer (Principal**)** for the insurances described as above.

When each premium has been paid, the Contractor shall submit copy of receipts to the Employer. The Contractor shall also, when providing such evidence, policies and receipts to the Employer, notify the Engineer of so doing.
The Contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the employer. Each policy insuring against loss or damage shall provide for payments required to rectify such loss or damage. Payments received from insurers shall be used for the rectification of such loss or damage.

The contractor (and, if appropriate, the employer) shall comply with the conditions stipulated in each of the insurance policies. The contractor shall make no material alteration to the terms of any insurance without the prior approval of the employer. If an insurer makes (or purports to make) any such alteration, the contractor shall notify the employer immediately.

If the contractor fails to effect and keep in force any of the insurances required under the contract, or fails to provide satisfactory evidence, policies and receipts in accordance with this sub-clause, the employer may, without prejudice to any other right or remedy, effect insurance for the coverage relevant to such default, and pay the premiums due. In such cases the premium paid by the employer plus nominal administrative charge shall be recoverable from the contractor by the employer, and may be deducted by the employer from any amounts due, or to be come due, to the contractor or recover the same as debt due from the contractor. The contractor shall not dispute the amount of premium paid by the employer or the overhead charges thereon.

Nothing in this clause limits the obligations, liabilities or responsibilities of the contractor or the employer, under the other terms of the contract or otherwise. Any amount not insured or not recovered from the insurers shall be borne by the contractor and/or the Employer accordingly, unless otherwise specified in the Special Conditions of Contract.

The Contractor shall submit to the Engineer, the details of all claims made with the insurer and claims accepted by the insurer or any other details as required by the Engineer on monthly basis.

All insurances mentioned shall be obtained with insurers approved by the Employer (Principal) and the contractor shall submit with the Employer (Principal) the policy or policies and the receipts in respect of premium paid.

Should the contractor make default in insuring or continuing to insure different from stated aforesaid the employer(principal) may himself insure against any risk with respect of which the default shall have occurred and deduct the premium from any amounts due to or to become due to the contractor. The Deductions shall be as envisaged in of the General Requirement for insurance given above.

Provided always that if the contractor shall independently of his obligations under this contract maintain a policy of insurance which covers (inter-alia) the said work, materials and goods against the aforesaid contingencies to the full value thereof then the maintenance by the contractor of such policy shall if the employer's (principal)interest is endorsed thereon, be a discharge of the contractor's obligation to insure in the joint names of the employer(Principal) and the contractor and the production by the contractor as and when may reasonably be required by the Employer(Principal) of a current certificate of insurance from the company or firm which shall have issued the said policy shall be a discharge of the contractor's obligation to submit with the Employer(Principal) a policy or policies and the receipts in respect of premium paid.

Upon settlement of any claim by the insurance companies under the insurances aforesaid, the contractor shall diligently with due diligence shall restore work damaged, replace or repair unfixed materials or goods which have been destroyed or injured, remove or dispose of any debris and proceed with the carrying out and completion of the work. All amounts received from such insurances shall be paid to the contractor by instalments under certificates of the Employer issued at the "Period of interim Certificate". The contractor shall not be entitled to payment in respect of restoration of work damaged, replacement and repair of any unfixed materials or goods and removal and disposal of debris Employer(Principal) other than amounts received under said insurance**.**

16 Force Majeure

Definition of Force Majeure **16.1** In this Clause, "force majeure " means an event beyond the control of the Employer and the Contractor, which makes it impossible or illegal for a party to perform, including but not limited to:

(a) act of God;
(b) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, mobilisation, requisition, or embargo;
(c) rebellion, revolution, insurrection, or military or usurped power, or civil war;
(d) contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly;
(e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Sub-contractors currently or formerly engaged on the Works.

If a party considers that it may be affected by Force Majeure, the party shall promptly notify the other party and Engineer of such Force Majeure within 21 days of such occurrence. If neither party issues any notice regarding the event within 21 days of its occurrence, the said event shall be deemed not to have occurred and the Contract shall continue to have effect as such.

Effect of Force Majeure Event **16.2** Neither the Employer nor the Contractor shall be considered in default or in contractual breach to the extent that performance of obligations is prevented by a Force Majeure event which arises after the date of signing of agreement. Upon the occurrence of such Force Majeure, the affected party shall endeavour to continue to perform its obligations as far as reasonably practicable.

Contractor's Responsibility **16.3** If affected by such Force Majeure, the Contractor shall promptly notify the Engineer of any proposals for overcoming the consequences of the Force Majeure, including any reasonable alternative means for performance, but shall not carry out these proposals without the consent of the Engineer.

Employer's Responsibility **16.4** If affected by such Force Majeure, the Employer shall promptly notify the Engineer and the Contractor of any proposals for overcoming the consequences of the Force Majeure.

Payment to Contractor **16.5** If the Works shall suffer loss or damage due to such Force Majeure, the Contractor shall be entitled to have included, in an Interim Payment Certificate, the Cost of work executed in accordance with the Contract.

Resumption of Work **16.6** The obligations under the Contract shall be resumed as soon as practicable after the event has come to an end or ceased to exist.
In case of doubt or dispute, whether a particular occurrence should be considered an "event" as defined under this clause, the decision of the Engineer shall be final and binding.
Works that have already been measured shall be paid for by the Employer even if the same is subsequently destroyed or damaged as a result of the event. The cost of rebuilding or replacing any work that has been measured shall be borne by the Employer.

Optional Termination, Payment and Release **16.7** Irrespective of any extension of time, if a Force Majeure occurs and its effect continues for a periodof6 months, after notice has been given under Sub-Clause 16.1, either party may give to the other party a notice of termination the Contract which shall take effect 28 days after the notice is given. Unless at the end of 28 days' period the effect of the Force Majeure has ceased, the Contract shall terminate upon that date. Otherwise, the Contract shall remain in effect.

The Contractor shall be paid fully for the work done under the Contract, but not for any defective work or work done which has been destroyed or damaged before its measurement. The Employer shall have the option to take over any Plant and Materials lying at site, at rates provided for in the Contract, failing that, as per rates, which are determined to be fair and reasonable by the Engineer.

Release from Performance Under the Law **16.8** If under the law of the Contract the Employer and the Contractor are released from further performance, the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub-Clause 16.7, if the Contract had been terminated under that Sub-Clause.

17 Claims, Disputes and Conciliation

Any and all Disputes shall be settled in accordance with the provision of this Clause

Procedure for Claims **17.1** If the Contractor intends to claim any additional payment under any clause of these Conditions or otherwise, the Contractor shall give notice to the Engineer as soon as possible and in any event within 28 days of the start of the event giving rise to the claim.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at any other location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer shall, on receipt of such notice, inspect such records and may instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all such records, and shall (if instructed) submit copies to the Engineer.

Within 28 days of such notice, or such other time as may be agreed by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

a. the initial fully detailed claim shall be considered as interim;
b. the Contractor shall send further interim claims at monthly intervals, giving the cumulative amount claimed, and any such further particulars as the Engineer may reasonably require; and
c. the contractor shall send a final claim within 28 days after the end of effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

If the Contractor fails to comply with this Sub-clause, he shall not be entitled to claim any additional payment.

Payment for Claims **17.2** The Contractor shall be entitled to have included in any Interim Payment Certificate such amount for any claim as the Engineer considers due, after taking approval from the Employer. If the particulars supplied are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment for such part of the claim as has been substantiated.

No Legal action till Dispute Settlement Procedure is Exhausted **17.3** Any and all Disputes shall be settled in accordance with the provisions of Clause 17. No action at law concerning or arising out of any Dispute shall be commenced unless and until all applicable Dispute resolution procedures set out in Clause 17 shall have been finally exhausted in relation to that Dispute or any Dispute out of which that Dispute shall have arisen with which it may be or may have been connected.

Notice of Dispute **17.4** A Dispute shall be deemed to arise when one party serves a notice in writing (hereinafter called a "Notice of Dispute") within 30 days from the date of rejection of claim by the parties.

Dispute Resolution **17.5** Disputes shall be settled through Conciliation procedures as established by “The Arbitration and Conciliation Act, 1996” and as amended from time to time.

Conciliation **17.6** Within 60 days of receipt of Notice of Dispute, either party shall refer the matter in dispute to conciliation. Conciliation proceedings shall be initiated within 30 days of one party inviting the other in writing to Conciliation. Conciliation shall commence when the other party accepts in writing this invitation. If the invitation is not accepted, then Conciliation shall not take place. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends the invitation, he may elect to treat this as a rejection of the invitation to conciliate and inform the other party accordingly.
The Conciliation shall be undertaken by one Conciliator selected from a panel of Conciliators maintained by the Employer. The Conciliator shall assist the parties to reach an amicable settlement in an independent and impartial manner.

Conciliation Procedure **17.7** The Employer shall maintain a panel of Conciliators with requisite qualifications and professional experience who shall be from serving or retired engineers of Government Departments, or of Public Sector Undertakings. Panel list not to include serving or former employees of the Employer. Out of this panel, a list of three Conciliators shall be sent to the Contractor who shall choose one of them to act as Conciliator and conduct conciliation proceedings in accordance with “The Arbitration and Conciliation Act, 1996”, of India. The party serving notice of dispute on the other party shall also serve such notice on the Conciliator chosen as per this Clause. The Employer at the time of offering the panel of Conciliators to be appointed as Conciliator shall also supply the information with regard to the qualifications of the said Conciliators nominated in the panel along with their professional experience, phone nos. and addresses to the Contractor.

In the event of the Contractor not choosing the Conciliator from the panel furnished by the Employer, within a period of 30 days, the Employer is at liberty to choose and nominate a Conciliator from the same panel and communicate to the Contractor which will be final and binding on the Contractor.

The Employer and the Contractor shall in good faith co-operate with the Conciliator and, in particular, shall endeavour to comply with requests by the Conciliator to submit written materials, provide evidence and attend meetings. Each party may, on his own initiative or at the invitation of the Conciliator, submit to the Conciliator suggestions for the settlement of the dispute.

When it appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of a possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, the Conciliator may reformulate the terms of a possible settlement in the light of such observations.

If the Parties reach agreement on a settlement of the dispute, they may draw up and sign a written settlement agreement. If requested by the Parties, the Conciliator may draw up, or assist the Parties in drawing up, the settlement agreement.
When the Parties sign the settlement agreement, it shall be final and binding on the parties and persons claiming under them respectively.

The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each of the Parties.

To the fullest extent feasible, the conciliatory process must be concluded within a period of sixty days subsequent to the acknowledgment of the appointment notice by the Conciliator.

The Parties shall not initiate, during the conciliation proceedings, any judicial proceedings in respect of a dispute that is the subject matter of the conciliation proceedings.

Termination of Conciliation Proceedings **17.8**

The conciliation proceedings shall be terminated:

a. by the signing of the settlement agreement by the Parties on the date of agreement; or
b. by written declaration of the Conciliator, after consultation with the Parties, to the effect further efforts at conciliation are no longer justified, on the date of declaration; or
c. by a written declaration of the Parties to the Conciliator to the effect that the conciliation proceedings are terminated, on the date of declaration; or
d. by a written declaration of a Party to the other Party and the Conciliator, if appointed, to the effect that the conciliation proceedings are terminated, on the date of declaration.

Upon termination of the conciliation proceedings, the Conciliator shall fix the costs of the conciliation and give written notice thereof to the Parties. The costs shall be borne equally by the Parties unless settlement agreement provides for a different apportionment. All other expenses incurred by a Party shall be borne by that Party.

Suspension of Work on Account of conciliation **17.9**

The reference to Conciliation shall proceed not withstanding that the Works shall not then be or be alleged to be complete, provided always that the obligations of the Employer, Engineer and the Contractor shall not be altered by reasons of conciliation being conducted during the progress of the Works. Neither party shall be entitled to suspend the work or part of the work to which the dispute relates on account of conciliation and payments to the Contractor shall continue to be made in terms of the Contract

Judicial Recourses **17.10**

In the event that a dispute remains unresolved via the conciliation process, the aggrieved party may seek judicial recourses

Jurisdiction of Courts **17.11**

Any suit or application, arising out of any dispute or differences on account of this contract shall be filed in a competent court at Bangalore, Karnataka only and no other court or any other district of the country shall have any jurisdiction in the matter

Matters finally determined by the Employer **17.12**

If the Contractor (s) does/do not prefer his/ their specific and final claims in writing, within a period of 90 days of receiving the intimation from the Employer that the final bill is ready for payment, he/they will be deemed to have waived his/their claims (s) and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims

18 Service of Notices

Notice to Contractor **18.1**

a**.** All notices to the Contractor shall be served by post or telex or telefax or by email or by hand to the Contractor or his authorized representatives. In case of notices delivered by post, they will be deemed to have been delivered after 7 days of dispatch.
b. The Contractor shall, on award of the Contract, furnish to the Engineer, the name, designation, address and telephone, telex and telefax numbers and e-mail address of his representative referred to in Clause 4.3.

c. The Contractor shall furnish to the Employer/Engineer the postal address of his site office. Any notice or instructions to be given to the Contractor under the terms of the contract shall be deemed to have been served on him if it has been delivered to his authorized agent or representative at site or if it has been sent by registered post to the site office, or to the address of the firm last furnished by the Contractor.

Notice to Employer and Engineer	**18.2**	All notices to the Employer or Engineer shall be served by post or telex or telefax, or by email or by delivering by hand to the address nominated for the purpose.
Change of Address	**18.3**	Parties to the Contract may change the nominated address with a notice to all concerned.

CONTRACT DATA

1	Contract Agreement (GCC Sub-Clause 1.4)	Contractor shall execute the Contract Agreement within 45 days from the date of issue of Letter of Acceptance.
2	Amount of Performance Guarantee (GCC Sub-Clause 4.2)	Within 30 days from the date of issue of Letter of Acceptance, the successful Tenderer shall furnish Performance Security at **5% (Five percent)** of the Contract Price as mentioned in LoA.
3	Guarantees and Warranties (GCC Sub-Clause 4.2.3)	To be submitted within 28 days from the date of issue of the Letter of Acceptance
4	Sub-contract (GCC Sub-Clause 4.5)	Sub-contract not allowed
5	Submission of Site Safety Plan (GCC 4.16.2)	To be submitted within 28 days from the date of issue of 'Letter of Acceptance'
6	Submission of Site Environmental Plan (GCC 4.17.1)	To be submitted within 28 days from the date of issue of 'Letter of Acceptance'
7	Submission of Site Quality Plan (GCC Sub-Clause 7.1)	To be submitted within 28 days from the date of issue of 'Letter of Acceptance'
8	Submission of Works Programme (GCC Sub-Clause 4.13)	To be submitted within 28 days from the date of receipt of 'Letter of Acceptance'
9	Penalty for "Non-deployment/ change of Key personnel" (GCC Sub-Clause 6.9 and Annexure-1 to Employer Requirements-Scope of Work)	**Key Personnel** a) Non-deployment of the Key personnel will attract a Penalty of Rs 50,000/- per Key personnel per month. b) The proposed Key personnel are not to be changed till the completion of the work. Under emergent circumstances, in case they are required to be changed, the new incumbent should have similar or better experience, qualification than as required, and mentioned in Annexure-1 to Employer Requirements-Scope of Work. These changes are permitted only with the approval of the Employer. Change in key personnel for one time without penalty is permitted. However, for subsequent changes there will be Penalty @ Rs. 50,000/- per Key Personnel. c) The Penalty for non-mobilisation / change of key personnel are over & above all other contractual provisions.
10	Date of commencement of the Works (GCC Sub-Clause 8.1)	D= Date of signing of Contract Agreement.
11	Time for Completion (GCC sub - Clause 8.2)	The whole of the works shall be completed and delivered within the time stated in Key Dates, as specified in Attachment-1 to Employer Requirements-Scope of Work. The completion period for whole of the works will be **17 months** reckoned from the Date of Commencement. (**5 months for original works including plantation and 12 months for annual maintenance of plantation**)

12	Liquidated Damages (LD) (GCC Sub-Clause 8.5)	Liquidated Damages (LD) @ Rs. 5,000/- per day of delay for each Key Date, as specified in Annexure-1 to Employers Requirements, shall be levied. However, the total Liquidated Damages (LD) shall be capped at 10% of the Contract Price.
13	Incentives for early completion of whole work (GCC sub- Clause 8.10)	Not Applicable
14	Defects Liability Period (GCC Sub-Clause 10)	The Defect Liability Period (DLP) is for 12 months from the date of taking over certificate for original works including plantation. The DLP will run concurrently along with one-year maintenance period for annual maintenance of plantation.
15	Price Variation/ Adjustment (GCC 11.1.2)	Not Applicable
16	Mobilization Advance (GCC Sub-Clause 11.2.1)	Not Applicable .
17	Advance Against Plant & Machinery (GCC Sub-Clause 11.2.2)	Not Applicable
18	Special/Acceleration Advance (GCC Sub-Clause 11.2.3)	Not Applicable
19	Retention Money (GCC Sub-Clause 11.7)	Retention Money in each IPC is limited to 10% of Bill amount. Maximum limit of Retention Money is 5% of Contract Price (as stated in LoA)
20	Period in which all insurances must be submitted (GCC Clause- 15.7)	Within 02 weeks from the date of commencement of works.

Section-F: Special conditions of contract (SCC)

Following Special Conditions of Contract (SCC) shall be in addition to the General Conditions of Contract (GCC). Wherever there is a conflict, the provisions here in (SCC) shall prevail over those in the GCC.

SCC Clause No	GCC Sub-Clause	Description
1	Sub-Clause 4.5 (**Sub-contractors**)	Sub-contracting is not allowed.

SECTION-G: CONTRACT FORMS

(to be used by Successful Tenderer only)

S. No.	Description
1	Contract Form 1- Contract Agreement
2	Contract Form 2- Bank Guarantee for Performance Security / Mobilisation Advance / Plant & Machinery Advance / Special Advance / Payment of Retention Money / Safe Custody of Materials Supplied by Employer to the Contractor etc.
3	Contract Form 2A- Insurance Surety Bond for Performance Security / Mobilisation Advance / Plant & Machinery Advance / Special Advance / Payment of Retention Money / Safe Custody of Materials Supplied by Employer to the Contractor etc.
4	Contract Form 3 - Contractor's Warranty
5	Contract Form 4 - Sub-Contractor's/Vendor's Warranty (As Applicable)

Note: - The content in Contract Form may be modified as appropriate and considered necessary by the Employer.

CONTRACT FORM- 1

CONTRACT AGREEMENT
(No. ……)

This Contract Agreement (hereinafter called the "Contract") is made at Bengaluru on this the ……day of …… by and between:

M/s BANGALORE METRO RAIL CORPORATION LIMITED, a Company incorporated under Companies Act, 1956, having its Registered office at III Floor, BMTC Complex, K.H.Road, Shantinagar, Bengaluru 560 027, Represented herein by **Mr. ……,** Executive Director (Civil), herein after referred to as "**BMRCL" or "Employer**", as the case may be, which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns, of one part, and;

M/s ……..., a ……. incorporated under the Companies Act, 2013 and having its corporate office at, ……; represented herein by **Mr. ……..;**, who is authorised to sign and bind the Company, under the Company's Board Resolution dated ……..and Power of Attorney dated ……., hereinafter referred to as the "Contractor", which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns, of the other part.

WHEREAS the Contractor which is a ……. had submitted a tender for the execution and completion, and remedying of any defects in the work relating to **"……"** pursuant to BMRCL's Tender Invitation No. …….. Dated ……and became successful bidder and agreed to undertake performance of the work under the terms and conditions set forth in this Contract;

AND WHEREAS, the Employer has agreed to hire and the Contractor has agreed to be hired for the execution and completion, and remedying of any defects in the work relating to **"……."** vide BMRCL's LoA No. …….. Dated …….. under the terms and conditions specified in this Contract Agreement and the other Contract Documents.

Now THEREFORE the parties hereby agree as follows:

Clause 1 Words and Expressions:

In this Contract all the words and expressions shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to.

Clause 2 the Contract Documents:

The following shall be deemed to form and be read and construed as a part of this Contract Agreement:

1. Letter of Acceptance.
2. Clarifications, Addenda, Corrigenda if any issued to Tender documents
3. Price Bid (BoQ)
4. Special Conditions of Contract
5. General Conditions of Contract (including Contract data)
6. Contract forms
7. Employers Requirements (scope of work)
8. Technical Specifications
9. Drawings
10. any other document forming part of the Contract

All the foregoing documents, together with this Contract Agreement, are referred to herein as the Contract. Also incorporated into the Contract, and made part here of are all Standard codes, Specifications of MORTH/CPWD/KPWD/IRS as applicable, and similar requirements that are referred to therein. The order of 'priority of documents' will be as per Clause 1.5 of GCC.

Clause 3 Obligations of the Contractor:

The mutual rights and obligations of the Employer and the Contractor shall be as set out in the Contract and in particular: -

3.1 The Contractor agrees, subject to the terms and conditions of the Contract, to perform efficiently and faithfully, all the prescribed works and provide other facilities requisite for or incidental to the successful completion of the Works and in carrying out all duties and obligations imposed by the Contract.

3.2 The Contractor agrees to remedy, at no extra cost to the Employer, the defect or failure (fair wear and tear excluded) after any part of the Work is taken over by the Employer until the end of Defects Liability Period.

3.3 The Contractor also agrees to remedy, at no extra cost to the Employer, the defect in or failure of equipment provided in the Works and any defects in materials supplied and workmanship up to the end of warranty period.

Clause 4 Obligations of the Employer:

The Employer agrees, subject to the terms and conditions of the Contract, to pay the Contractor the amount specified, and at the rates and terms, and in the manner set out in the Contract.

Clause 5 Contract Price:

5.1 The Employer agrees to pay the Contractor the total amount mentioned below (hereinafter called 'the Contract Price') and the Contractor agrees to accept the total amount mentioned below for the due execution, completion, maintenance and guarantee of the works carried out by him as part of his obligations, responsibilities and liabilities under and according to the provisions and obligations imposed on him by the Contract.

₹……../- (Indian Rupees ……only) which includes all taxes, cess, duty, royalty and other levies applicable for the works **except Goods and Services Tax (GST)**. **BMRCL will reimburse GST to the Contractor** based on the output GST levied on works contract services corresponding to the taxable value of the works executed and duly remitted by the Contractor. BMRCL will make this reimbursement upon receipt of a valid GST-compliant tax invoice submitted along with the Contractors Bills.

5.2 The Contract Price mentioned above will be increased or decreased during the period of performance of the Contract as specifically provided, if any, in the Conditions of Contract and no additional amount on any other account whatsoever shall be payable to the Contractor.

Clause 6 Completion Time:

The Contractor shall complete whole of the works within ……**months** from the Commencement Date (i.e. date of signing the 'Contract Agreement')**.** The Defect Liability Period (DLP) is for 12 months from the date of taking over certificate for original works including plantation**.**

Clause 7 Integration:

The Employer and the Contractor agree that this Contract Agreement, together with the other Contract Documents, expresses all the agreements, understandings, promises, and covenants of the parties, and integrates, combines, and supersedes all prior and contemporaneous negotiations, understandings, and agreements, whether written or oral, and no modification or alteration of the Contract Documents shall be valid or binding on either party, unless expressed in writing and executed with the same formality as this Contract Agreement, except as may otherwise be specifically provided in the Contract Documents.

Clause 8 Governing Law:

This Contract is enforceable and construed under the applicable laws of the Republic of India.

Clause 9 Dispute Resolution & Jurisdiction:

Any Dispute or difference of any kind whatsoever between the Employer and the Contractor arising out of or in connection with this agreement shall be referred to a mutually acceptable experienced Conciliator who shall make every endeavour to make the parties reach a mutually acceptable settlement, failing which either of the parties shall be at liberty to approach jurisdictional Commercial Court at Bangalore for adjudication of the Dispute. The Conciliation shall be conducted in accordance with the Arbitration and Conciliation Act, 1996 of India as amended from time to time and the Rules thereunder. The Conciliation process shall be completed within 60 days from the date of acknowledgement of the appointment notice by the Conciliator.

Clause 10 Language:

This Contract Agreement and the other Contract Documents are made in the English language.

Clause 11 Notices:

All Notices caused by the terms of this Contract shall be in writing in English Language and shall be delivered by hand or by registered mail with acknowledgement due. All notices shall be deemed to be duly made by the party to whom it is addressed at the following address or such other address in India as such Party may subsequently notify to the other.

(a) Employer's address: Bangalore Metro Rail Corporation Ltd.
III Floor, BMTC Complex
K.H. Road, Shanthinagar,
Bengaluru – 560 027
Karnataka, India

(b) Contractor's address: M/s ……..
……,
……,
…….....

IN WITNESS WHEREOF, the parties here to have caused this Contract Agreement to be signed in their respective names by their authorised representatives on the day, month and year first above written.

For Bangalore Metro Rail Corporation Ltd.	**For M/s …….**
(Employer)	(Contractor)
(Mr. ……)	**(Mr. …….)**
Executive Director (Civil)	
WITNESS_____	WITNESS_____

Notes: (for preparation of but not for inclusion in the engrossment of the Contract Agreement)

1 If the Contractor comprises a partnership, liability will be joint and several, and each partner thereof must be identified.

2. Enter the appropriate nature of the Contractor; company, partnership as the case may be.

3. Enter the date of the appropriate resolution.

4. If the Contractor comprises a partnership, each partner thereof must execute.

5. The required Stamp duty in accordance with Karnataka Stamp Act is to be borne by the contractor

CONTRACT FORM- 2

FORM OF BANK GUARANTEE FOR …… *[to be filled as per Note-1]*

(Refer clause 4.2.1 GCC & Contract Data)

(To be stamped in accordance with the Stamp Act of the Country of Issuing Bank)

To

Bangalore Metro Rail Corporation Limited (BMRCL)
3rd Floor, BMTC Complex,
K.H. Road, Shanthinagar
Bengaluru – 560027,
Karnataka, INDIA.

1. **WHEREAS** _____ *[Name and Address of the Contractor]* (hereinafter referred to as the "Contractor") has undertaken for due performance of the Contract, in pursuance of LoA/Contract No. _____ for _____ *[Description of the Contract work to be specified]* (hereinafter referred to as "the Contract"). The Contract was awarded by Bangalore Metro Rail Corporation Limited (hereinafter referred to as the "Employer" or "BMRCL"), which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors and assignees, to the Contractor.

2. **AND WHEREAS** it has been stipulated in the Contract that the Contractor shall furnish to the Employer with an unconditional and irrevocable Bank Guarantee for _____[2.1] (Performance Security / Mobilization Advance/ Plant & Machinery Advance/ Special Advance/ Retention Money/ Safe custody of materials) for the sum specified herein below as security for [2.2] (compliance of the obligations and performance of the Contractor/ such Advance Payment/ Retention Money/ Employer's materials under Contractor's custody). In pursuance to this M/s_____ (The Contractor) has requested for issuance of the Bank Guarantee for the sum specified herein below.

3. **AND WHEREAS we** _____ *[Name and full address of the Bank including Email address]* having registered office at _____ (hereinafter referred to as the "Bank"), which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors, assignees, and the correspondent Bank hereby agrees to give the Employer on behalf of the Contractor such a Bank Guarantee drawn and payable at Bengaluru branch.

4. **NOW therefore**, the Bank hereby affirm, that it is the guarantor and is responsible to the Employer and their successors, on behalf of the Contractor 'up to a total sum of _____ *[the amount of Guarantee to be specified in figure and words in the respective currency/ies in which the contract price is payable]*. Further, the Bank hereby unconditionally, irrevocably and without demur undertake to immediately pay, the Employer upon the Employer's first written demand and without cavil, or arguments any sum or sums within the limits of the sum specified in this Bank Guarantee as aforesaid without the Employer being required to prove or to show grounds or reasons for the demand, by depositing/crediting to the Current Account of the Employer, the sums specified herein.

5. This Bank Guarantee is encashable at the Issuing Bank's designated Branch in Bengaluru, Karnataka, India as mentioned below:

   Name of the Bank, Branch and contact details, Address, telephone no: & Fax No: E-mail Address Branch Manager/s name & Mobile No: Bank Zonal Office Address, Telephone No, Fax Number, E-mail Address:

   OR

   This e- Bank Guarantee shall be encashable at the issuing branch of the Bank through NeSL portal.

6. The Bank hereby confirms that the Bank is on the SFMS (Structural Finance Messaging System) platform and shall invariably send an advice of the Bank Guarantee to the designated Bank of the Employer (Bangalore Metro Rail Corporation Limited) as given below:

Sl. No.	Particulars	Details
i	Name of Beneficiary	Bangalore Metro Rail Corporation Limited
ii	Name of Bank	Bank of India
iii	Branch	Cantonment Branch, Bengaluru.
iv	Address of Branch	49, Jyothi Mahal, St. Mark's Road, Bangalore – 560 001
v	Account No.	840420110000760
vi	IFSC Code:	BKID0008404

7. This Bank Guarantee shall be encashed at the demand of the Employer on or before the due date.

8. The Employer shall have rights to encash this Bank Guarantee at any time during the validity period and the 'Contractor' shall have no right or claim whatsoever in the matter of encashment of the Bank Guarantee amount by the 'Employer'. The Bank will have their responsibility in terms of the guarantee and obligation, to make immediate payment to the 'Employer', without the consent of the 'Contractor' and without referring the matter to the 'Contractor'.

9. The Bank shall be liable to pay the 'Employer', any amount up to and inclusive of the aforementioned full amount upon written order from the 'Employer' to indemnify the 'Employer' for any liability or damage resulting from any defects and/or shortcomings of the 'Contractor' and/or the debts the 'Contractor' may have incurred with the 'Employer' and/or any parties involved in the Works under the Contract mentioned above, whether these defects and/or shortcomings and/or debts are actual and/or estimated and/or expected. The Bank will deliver the money required by the 'Employer' immediately on demand without delay without reference to the 'Contractor' and without the necessity of a previous notice or of judicial or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the 'Contractor'.

10. Courts at Bengaluru, Karnataka, India shall have exclusive jurisdiction for adjudicating the disputes arising out of the encashment of the Guarantee, and, the said Bank undertakes not to revoke this Guarantee during its currency, except with the previous consent of the 'Employer' in writing and agree that any change in the constitution of the Bank shall not discharge its liability hereunder.

11. This Bank Guarantee will not be discharged due to the change in the constitution of the 'Contractor' or change in the constitution of the Bank.

12. This Deed of guarantee is signed and executed by Shri/Smt _____and Shri/Smt _____who is/are authorized by the Bank for issuing the guarantee on its behalf and their ID No/s. and Email address/es being _____ & _____ and _____ & _____ respectively.

13. The Bank's liability under this Guarantee shall not exceed the amount of_____ *[Indian Rupees/Foreign Currency/ies to be specified in words and figures].*

14. This Bank guarantee shall be valid till _____ *[Date to be mentioned].*

15. The pendency of any dispute or legal proceedings shall not affect this guarantee in any manner.

16. It is hereby agreed that the liability of the Bank under this guarantee shall cease on the happening of any of the following events:
    a) Payment by the Bank of the Guaranteed sum in full to the 'Employer',
    or
    b) Issue of written communication by the Employer, to the Bank, along with the original Bank Guarantee discharging the Bank of its liability covered by this Bank Guarantee and in case of electronic Bank Guarantee (e-BG), after release/discharge of e-BG by the Employer through NeSL portal.

SIGNATURE AND SEAL OF THE GUARANTOR

DATE: _____

NAME OF THE BANK: _____

ADDRESS: _____

Notes:

1. Any one of the following type of 'Bank Guarantee' is to be inserted in the heading after the word '**FORM OF BANK GUARANTEE FOR'** according to the purpose:

   a) "**PERFORMANCE SECURITY**" or

   b) "**MOBILIZATION ADVANCE PAYMENT**" / "**PLANT & MACHINERY ADVANCE PAYMENT**" / "**SPECIAL ADVANCE PAYMENT**" or

   c) "**PAYMENT OF RETENTION MONEY**" or

   d) "**SAFE CUSTODY OF MATERIALS**".

2. In Para-2, insert from the bracket the appropriate option according to the type[2.1] and purpose[2.2] of the BG to fill in the blanks.
3. The stamp paper of appropriate value shall be purchased in the name of the bank, who issues the "Bank Guarantee".
4. The Bank Guarantee to be submitted shall be got issued from an Indian Scheduled Bank (excluding Cooperative Bank) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with second schedule.
5. The above format shall be used for e-Bank Guarantee also.
6. For issuance of e-BG, the UIN (PAN No.) of BMRCL is AAACB4881D.
7. Tender No. as mentioned in relevant para of tender document shall be the reference to be mentioned in the e-BG.

CONTRACT FORM -2A

FORM OF INSURANCE SURETY BOND FOR …… *[to be filled as per Note-1]*

(Refer clause 4.2.1 GCC & Contract Data)
(To be stamped in accordance with the Stamp Act of the Country of Issuing Surety Insurer)

To,
Bangalore Metro Rail Corporation Limited,
3rd Floor, BMTC Complex, Shanthinagar,
Bengaluru – 560027.

WHEREAS _____ [Name and Address of the Contractor] (hereinafter referred to as the "Contractor") has undertaken for due performance of the Contract, in pursuance of LoA No. _____ for _____ [Description of the Contract work to be specified] (hereinafter referred to as "the Contract").
The Contract was awarded by Bangalore Metro Rail Corporation Limited (hereinafter referred to as the "Employer" or "BMRCL"), which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors and assignees.

AND WHEREAS it has been stipulated in the Contract that the Contractor shall furnish to the Employer with an unconditional and irrevocable Insurance Surety Bond for ……. [2.1] (Performance Security / Mobilization Advance/ Plant & Machinery Advance/ Special Advance/ Retention Money) for the sum specified herein below as security for …… [2.2] (compliance of the obligations and performance of the Contractor/ such Advance Payment/ Retention Money).

In pursuance to this M/s_____ (The Contractor) has requested for issuance of the Insurance Security Bond for the sum of _____ [the amount of Guarantee to be specified in figure and words in the respective currency/ies in which the contract price is payable].
AND WHEREAS we _____ [Name and full address of the Surety Insurer including Email address] having registered office at _____ (hereinafter referred to as the "Surety Insurer"), which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors, assignees, hereby agrees to give the Employer on behalf of the Contractor such a Insurance Surety Bond drawn and payable at Bengaluru branch.

NOW, THEREFORE, the Surety Insurer hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Surety Insurer herby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the (Construction Period/ Defects Liability Period and Maintenance Period under and in accordance with the Contract, and agrees and undertakes to pay to the Employer, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Surety Bond Amount as the Employer shall claim, without the Employer being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Employer, under the hands of an officer not below the rank of General Manager, BMRCL,that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Surety Insurer. The Surety Insurer further agrees that the Employer shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Contract and its decision that the Contractor is in default shall be final and binding on the Surety Insurer, notwithstanding any differences between the Employer and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Employer or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Surety Bond, the Employer shall be entitled to act as if the Surety Insurer were the principal debtor and any/Change in the constitution of the Contractor and/or the Surety Insurer, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Surety Insurer under this Surety Bond.
4. It shall not be necessary, and the Surety Insurer hereby waives any necessity, for the Employer to proceed against the Contractor before presenting to the Surety Insurer its demand under this Surety Bond.
5. The Employer shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Contract or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Contract or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Employer against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Contract and/or the securities available to the Employer, and the Surety Insurer shall not be released from its liability and obligation under these presents by any exercise by the Employer of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Employer or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law.
6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Employer in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.
7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Employer on the Surety Insurer under this Surety Bond all rights of the Employer under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder.

8. The Surety Bond ceases to be in force and effect on **** Unless a demand or claim under this Surety Bond is made in writing before expiry of the Surety Bond, the Surety Insurer shall be discharged from its liabilities hereunder.
9. The Surety Insurer undertakes not to revoke this Surety Bond during its currency, except with the previous express consent of the Employer in writing and declares and warrants that it has the power to issue this Surety Bond and the undersigned has full powers to do so on behalf of the Surety Insurer.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer & the Employer that the envelope was so posted shall be conclusive.
11. This Surety Bond shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Employer pursuant to the provisions of the Contract.
12. This Surety Bond is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

13. This Surety Bond shall also be operable at our ……., branch at Bangalore, from whom, confirmation regarding the issue of this Surety Bond or extension/renewal thereof shall be made available on demand. In the contingency of this Surety Bond being invoked and payment here under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
14. The Insurance Surety Bond shall be verified from the specific portal created for this purpose.

Signed and sealed this……...Day of……...,26……at……

SIGNED, SEALED AND DELIVERED For and on behalf

of the Surety Insurer by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

CONTRACT FORM-3

CONTRACTOR'S WARRANTY

THIS WARRANTY is made the day of

BY [ ] of [ ] [and [see Note 1]] ([jointly] "the Contractor")

TO [ ] [of]/ [whose registered office is at] [ ] (together with its successors and assigns, "the Employer")

WHEREAS

By a work-contract for Construction of:**(Name of the work)----------**

Tender Notification No ---------- Dated --.--. ----.

(A) dated [ ] ("the Contract") made between (1) the Bangalore Metro Rail Corporation Limited ("the Employer") and (2) the Contractor, the Contractor has agreed to design, execute, complete, test and commission and remedy any defect in the Works upon the terms and conditions contained in the Contract.

(B) [See Note 3].

(C) At the request of the Employer and pursuant to the terms of the Contract the Contractor has agreed to provide this Warranty.

NOW IT IS AGREED AS FOLLOWS:

1. The Contractor hereby warrants and undertakes that:

(a) the Contractor will construct and complete the work and remedy any defect in the Works in accordance with the terms of the Contract; and

(b) the Contractor owes a duty of care to the Employer in relation to the performance of its duties under the Contract; and

(c) the Contractor will replace free of cost to the Employer any defect or failure of equipment provided in the Works for a period of------months from the date of taking over of section of the Works; and

(d) the Contractor agrees that should any modification be required to any part of the construction -work as a consequence of failure analysis, the period of … months shall re-commence from the date when the modified part is commissioned into service, and such modification shall be carried out free of cost to the Employer in all sections; and

(e) the Contractor shall maintain the whole workmanship and construction completed by him (including those of his Sub-Contractors/Vendors) for the materials supplied and good workmanship imparted in the Contract-work for at least 2 years from the date of Completion of the Contract; and

(f) the Contractor has exercised and will continue to exercise in the execution of the work all the skill and care to be expected of a professionally qualified and competent Constructor/Contractor experienced in work of similar nature and scope as the Works; and

(g) the Works will, when completed, comply in all respects with the Employer's Requirements, Technical Proposals, the Final Design Document and the intended use of the Works; and

(h) the Works has been or will be constructed and executed to the highest standards available using internationally proven up-to-date good practice; and

(i) the Works will, when completed, comply with enactments and regulations relevant to the Works; and

(j) no Materials generally known to be deleterious or not in accordance with good engineering practice have been or will be specified or selected or incorporated in the Works by the Contractor.

(k) the execution of the Works and inclusive of manufacture of all members and structures have taken or will take full account of the effects of the intended manufacturing and installation methods, Temporary Works and Contractor's Equipment.

2. The liability of [the companies comprising [see Note 3]] the Contractor under this Warranty [shall be joint and several and [see Note 3]] shall not be released, diminished or in any way affected by any independent inquiry or investigation into the Works or any matter related to the Contract whether carried out by or on behalf of the Employer or any liability or right of action which may arise out of such inquiry or investigation.

3. Insofar as the copyright or other intellectual property rights in any plans, calculations, drawings, documents, materials, plant, know-how and other information relating to the Works shall be vested in the Contractor, the Contractor grants to the Employer his successors and assigns a royalty free, non-exclusive and irrevocable licence (carrying the right to grant sub-licences) to use and reproduce any of the works designs or inventions incorporated and referred to in such documents or materials and any such know-how and information for all purposes relating to the Works or the Bangalore Metro Rail Project including without limitation the design, manufacture, installation, completion, testing and commissioning reinstatement, extension and the remedy of any defect in the Works. To the extent that beneficial ownership of any such copyright or other intellectual property rights is vested in anyone other than the Contractor, the Contractor shall use best endeavours to procure that the beneficial owner thereof shall grant a like licence to the Employer. For the avoidance of doubt, any such licence granted shall not be determined if the Contractor shall for any reason cease to be employed in connection with the Works.

4. The provisions of this Warranty shall be without prejudice to and shall not be deemed or construed so as to limit or exclude any rights or remedies which the Employer may have against the Contractor, whether in tort or otherwise.

5. Nothing contained in this Warranty shall vary or affect the Contractor's rights and obligations under the Contract.

6. The address for service of all documents arising out of or in connection with this Warranty shall be: -

(a) Upon the Employer: Bangalore Metro Rail Corporation Ltd; at 3rd Floor, BMTC Complex, K.H.Road, Shanthinagar, Bangalore – 560 027,Karnataka State India.

(b) Upon the Contractor at [ ] India. [Note 4]

7. The Employer and the Contractor may change their respective nominated addresses to another address in India but only by prior written notice to each other. All notices must be in writing.

8. This Warranty shall be governed by and construed according to the laws for the time being in force in India.

9 Any dispute or difference of any kind whatsoever between the Employer and the Contractor arising under out of or in connection with this Warranty shall be settled in accordance with the provision of GCC Clause 17. “Dispute” as defined in the Contract shall be deemed to include any such dispute or difference between the Employer and Contractor.

IN WITNESS whereof this Warranty has been executed as a deed on the date written at the head hereof.

THE COMMON SEAL of)

[ ])

was affixed hereto)

in the presence of: -)

Notes (for preparation of and not inclusion in the engrossment of this Warranty)

(1) If the Contractor comprises more than one company, each such company shall be a party and liability under this warranty will be joint and several, with consequential grammatical changes.

(2) If Note 1 applies, that fact and the joint venture/consortium or other relevant agreement must be recited.

(3) Delete if Note 1 does not apply.

(4) The address for service shall be in India.

CONTRACT FORM- 4

SUB-CONTRACTOR'S / VENDOR'S WARRANTY

THIS WARRANTY is made the day of

BY [ ] [whose registered office is at]/ [of] [ ] ("the Sub-contractor ") and

TO The Bangalore Metro Rail Corporation Limited (together with its successors and assigns, "the Employer") of:
Third Floor,
BMTC Complex,
K.H.Road,
Shantinagar,
Bangalore - 560 027.

WHEREAS

By a work-contract for Construction **(Name of the work)----------**

(A) Tender Notification No ---------- Dated --.--. ----.

dated [ ] ("the Contract") made between

(1) Bangalore Metro Rail Corporation Limited ("the Employer")

and

(2) [ ] ("the Contractor"), the Contractor has agreed to Construction of **: (Name of the work)----------**

Tender Notification No ---------- Dated --.--. ----., and remedy any defects in works upon the terms and conditions contained in the Contract.

(B) The Sub-contractor / Vendor has had an opportunity of reading and noting the provisions of the Contract (other than details of the Contractor's prices and rates).

(C) Pursuant to the Contract, the Contractor wishes to enter into an agreement with the Sub-contractor / Vendor ("the Sub-contract") for the sub-contract ("the Sub-contract") to carry out and complete a part of the Works as more particularly described in the Sub-contract ("the Sub-contract Works").

(D) The Contract stipulates that the Contractor shall obtain the consent of the Engineer before entering into the Sub-contract, and that the Contractor shall procure that the Sub-contractor executes a warranty agreement in favour of the Employer.

NOW IT IS HEREBY AGREED as follows: -

1. In consideration of the Engineer consenting to the Contractor and the Sub-contractor / Vendor entering into the Sub-contract / Vendor, the Sub-contractor warrants and undertakes to the Employer that:

   (a) he will execute and complete the Sub-contract Works/Supply, and will carry out each and all of the obligations, duties and undertakings of the Sub-contractor / Vendor / under the Sub-contract when and if such obligations, duties and undertakings shall become due and performable, in accordance with the terms of the Sub-contract (as the same may from time to time be varied or amended with the consent of the Employer); and

b) he will supply to the Contractor and in specific cases wherever required to the Engineer with all information as may be required from time to time in relation to progress of the Sub-contract Works.

2. The Sub-contractor / Vendor undertakes to indemnify the Employer against each and every liability which the Employer may have to any person whatsoever and against any claims, demands, proceedings, loss, damages, costs and expenses sustained, incurred or payable by the Employer provided that the Sub-contractor / Vendor shall have no greater liability to the Employer by virtue of this Warranty than the liability of the Contractor to the Employer under the Contract insofar as and to the extent that the same has arisen by reason of any breach by the Sub-contractor / Vendor of his obligations under the Sub-contract.

3 No allowance of time by the Employer hereunder or by the Contractor under the Sub-contract nor any forbearance or forgiveness in or in respect of any matter or thing concerning this Warranty or the Sub-contract on the part of the Employer or the Contractor, nor anything that the Employer or the Contractor may do or omit or neglect to do, shall in any way release the Sub-contractor / Vendor from any liability under this Warranty.

4 The Sub-contractor / Vendor agrees that he will not without first giving the Employer not less than 21 day's prior notice in writing exercise any right he may have to terminate the Sub-contract or treat the same as having been repudiated by the Contractor or withhold performance of its obligations under the Sub-contract.

5. (1) In the event that the Contract or the employment of the Contractor under the Contract is terminated for any reason whatsoever and if so requested by the Employer in writing within 21 days of such termination, the Sub-contractor / Vendor shall carry out and complete his obligations under this Warranty and shall enter into a novation agreement with the Employer and the Contractor in which the Sub-contractor will undertake inter alia to perform the Sub-contract and be bound by its terms and conditions as if the Employer had originally been named as a contracting party in place of the Contractor. The said novation agreement will be in such form as the Employer may reasonably require.

(2) In the event that the Employer does not require the Sub-contractor / Vendor to enter into a novation agreement as required by Sub-clause 5(1), the Sub-contractor shall have no claim whatsoever against the Employer for any damage, loss or expense howsoever arising out of or in connection with this Warranty.

6. Insofar as the copyright or other intellectual property rights, in any plans, calculations, drawings, documents, materials, know-how and information relating to the Sub-contract Works shall be vested in the Sub-contractor / Vendor, the Sub-contractor / Vendor grants to the Employer, his successors and assignees a royalty free, non-exclusive and irrevocable licence (carrying the right to grant sub-licences) to use and reproduce any of the works designs or inventions incorporated and referred to in such documents or materials and any such know-how and information for all purposes relating to the Works of the Bangalore Metro Rail Project, without limitation the design of enabling facilities, construction, installation, reconstruction, completion, reinstatement, extension, remedy of any defect of the Works. To the extent beneficial ownership of any such copyright or other intellectual property right is vested in anyone other than the Sub-contractor / Vendor, the Sub-contractor shall use best endeavours to procure that the beneficial owner thereof shall grant a like licence to the Employer. For the avoidance of doubt, any such licence granted shall not be determined if the Sub-contractor / Vendor shall for any reason cease to be employed in connection with the Sub-contract Works.

7. In the event of any ambiguity or conflict between the terms of the Sub-contract and this Warranty, the terms of this Warranty shall prevail.

8. The provisions of this Warranty shall be without prejudice to and shall not be deemed or construed so as to limit or exclude any rights or remedies which the Employer may have against the Sub-contractor / Vendor whether in tort or otherwise.

9. Nothing contained in this Warranty shall vary or affect the Sub-contractor's / Vendor's rights and obligations under the Sub-contract.

10. The Employer shall be entitled to assign the benefit of this Warranty at any time without the consent of the Sub-contractor / Vendor being required.

11. All documents arising out of or in connection with this Warranty shall be served:

    (i) upon the Employer at [ ] , marked for the attention of [ ];

    (ii) upon the Sub-contractor / Vendor, at [ ] India.

12. The Employer and the Sub-contractor / Vendor may change their respective nominated addresses for service of documents to another address in India but only by prior written notice to each other. All demands and notices must be in writing.

13. This Warranty shall be governed by and construed according to the laws for the time being in force in India.

14. Any dispute or difference of any kind whatsoever between the Employer and the Sub-contractor / Vendor arising under out of or in connection with this Warranty shall be settled in accordance with the provision of GCC Clause 17.

IN WITNESS whereof this Warranty has been executed as a deed on the date first before written.

THE COMMON SEAL of)

[ ])

was affixed hereto in)

the presence of:-)

SECTION-H: EMPLOYERS REQUIREMENTS (SCOPE OF WORK)

1.0 SCOPE OF WORK:

1.1 GENERAL

It is proposed to take up **"Planning, Designing & Execution of Area Development, Horticulture & Landscaping Works in Kothnur Depot of Bangalore Metro Rail Project, Phase-2**".

2.0 WORK CONTENT

2.1 Brief Scope

Contractor shall plan, design the area development, horticulture, landscaping works including irrigation system, drainage system, pathways, water bodies, mounds, planter boxes, rain water harvesting, etc. and execute the work as per approved final detail drawing (Refer Depot layout enclosed in Tender Document).

1. Contractor shall consider respective BOQ items for selection of various species of plants, trees, shrubs, creepers, lawn & hedges to suite the weather condition of particular area.

2. Contractor shall take approval of nursery, good earth source and plants before dispatching to work site.

3. Contractor shall develop the area along with horticulture & landscaping works to enhance the atheistic view of Depot.

4. Contractor shall prepare and submit preliminary concept plan & design of area development, horticulture, landscaping drawings, rainwater harvesting etc. with hard copies of A1 size (2 sets) & soft copies for preliminary approval of Engineer-In-Charge and after finalizing the concept drawings contractor shall prepare and submit detail drawing including types of plants/trees, shrubs, creepers, hedges, lawn, footpath, kerbs, waterbodies, mounds, irrigation system, drainage system etc. in A1 size (2 sets) & soft copies for final approval of Engineer-In-Charge. Contractor shall arrange presentation of area development, horticulture & landscaping works.

5. Contractor shall engage well experienced Architects for planning & designing of area development, horticulture & landscaping as per the advice of horticulture & landscaping experts to suite the weather condition of depots.

6. Architect and horticulture expert shall visit the site in advance before developing the concept drawing and detail drawing.

7. Contractor shall submit the concept drawing within 30 days from the date of agreement.

8. Contractor shall prepare and submit the as built drawing (A1 size, 3 sets & soft copy) after completion of work.
9. Contractor shall provide and plant the various types of approved trees/plants/shrubs/creepers as per approved drawings.

10. Contractor shall submit the methodology for plantation of various species of plant/shrubs/trees/creepers, lawn, hedges etc.

11. Contractor shall submit the programme for planning, designing & execution of area development/horticulture/landscaping works and progress reports on monthly basis by 1st week of every month with photographs both in Hard copy (2 Copies) and soft copy (CD) in color.

12. Contractor shall arrange all the required material in advance for area development work like footpath, waterbodies, planter box, drainage system etc. before commencement of work.

13. Contractor shall arrange the all varieties of plants/trees/shrubs/creepers etc. well in advance during planning & designing of detailed drawing of area development/horticulture/landscaping.

14. Contractor shall provide & apply pesticides, insecticides, fertilizers etc. as per requirement or as directed by Engineer-In-Charge during contract period and annual maintenance period.

15. Contractor shall make own arrangement for covering the sunlight for protecting the all varieties of plants/shrubs etc. during execution of work.

16. Contractor should preferably use treated water from STP/ETP of the depot and car wash plant for horticulture purpose. In case of shortage of water from treatment plant, contractor has to make his own arrangement for watering for which payment will be made under relevant item. But in both cases, the responsibility of successful plantation and maintenance and watering lies with contractor only.

17. Contractor shall not damage any of the utilities or structures of depot and if any such damages done contractor has to restore to original condition with free of cost.

18. Contractor shall arrange their own tools, manpower equipment's, trucks, excavators, pumps etc. for execution of area development, horticulture & landscaping works.

19. Contractor shall make his own arrangement for electric supply and water supply for execution of work for entire contract period.

20. Contractor shall follow all the safety norms as per safety manual of BMRCL.

21. Contractor shall provide good earth, sludge, manure etc. and to be stacked at designated area as directed by Engineer-in-charge.

22. Contractor shall collect and dispose unserviceable material/unsuitable earth for horticulture work in the BBMP/city municipality identified area.

23. Contractor shall clean all the areas utilized by them during the execution of work.

24. Contractor shall arrange his own security arrangement for horticulture & landscaping works to protect from damages from animals/birds or any other persons during contract period & annual maintenance period.

25. Contractor shall follow the instruction of security personnel of depot during the execution of work and annual maintenance period.

26. Contractor shall arrange temporary water storage (min 6000 liters) within the site and also water tankers shall be arranged for continuous supply of water during execution of work & annual maintenance period.

27. Contractor shall deploy sufficient no. of manpower, tools, equipment to maintain the horticulture & landscape area during the contract period and annual maintenance period.

28. Contractor shall maintain the horticulture & landscape area as per specification/description mentioned in BOQ & contract document and as per approved annual maintenance plan during the contract period and annual maintenance period.

29. The Defect Liability Period is for 1 year from date of taking over certificate for original works. The DLP will run concurrently along with one-year maintenance period.

a. The maintenance of plants during contract period is responsibility of contractor including water supply as per BOQ provisions.
b. The defect liability period (DLP) starts from date of taking over certificate for original works.
c. The maintenance period also starts from date of taking over certificate for original works.
d. Hence, the DLP and maintenance period both will run concurrently.
e. During construction period, subject to availability of water, if contractor avails water from depot treated water (STP/ETP) then, cost of water at the rate of Rs. 0.1073 per litre will be deducted from bills. However, responsibility of transportation lies with contractor and no extra payment for this will be made.

2.2 The Scope of Civil & Structural works:

The scope of works shall, inter-alia, include the following but not be limited to:

a. Site clearance and dismantling of obstructions, etc., before commencement of work as specified or as directed;

(1) The tenderer must visit sites to acquaint himself with the local conditions/surroundings before quoting. There is no major structure required to be demolished by the contractor in this Scope of Work. Site clearance, which includes dismantling of median, footpath any temporary structure, small shed etc. All the trees and hoarding/buildings coming in the way of construction work have to be cleared by contractor, cutting of trees / branches also may have to be done by the contractor for which payment will be made under relevant schedule of payment in pricing schedule. BMRCL will make necessary arrangement for clearance as required.

(2) True and proper setting out i.e. the lines and levels of formation, various layers of carriage way with proper camber shall be carefully set out and frequently checked as per GFCs and layout of the works, bench marks and provision of all necessary labour, surveying instruments and appliances in connection therewith as specified and as directed;

3.0 TIME SCHEDULE:

The agency shall submit with the tender "Time Schedule" for completion of various activities/ portions of works. This schedule is to be within the overall completion period mentioned in NIT for the construction and maintenance work. The CONSTRUCTION PROGRAMME AND PROJECT MONITORING to be provided as mentioned in General Conditions of Contract and Special Conditions of Contract. The detailed programme has to be in the form of a quantified bar chart or MSP from start to completion of the work.

4.0 WORKS PROGRAMME:

The Works Program shall show the Contractor’s plan for organizing and carrying out whole of the Works.

4.1 MONTHLY PROGRESS REPORTS

GENERAL

The Contractor shall submit to the Engineer, a Monthly Progress Report. This Report shall be submitted by the end of each calendar month and shall account for all work actually performed from 26th day of the last month and up to and including the twenty-fifth (25th) day of the month of the submission. It shall be submitted in a format to which the Engineer shall have given his consent and shall contain sections/sub-sections for, but not be limited to, the topics listed in clauses below.

5.0 QUALITY ASSURANCE:

5.1 General

The Contractor shall implement a Project Quality Management Plan in accordance with ISO-9001 “Quality System – Model for Quality Assurance in Design/Development and maintenance” or any other system as approved by Engineer to ensure that all materials, workmanship, plant and equipment supplied and work done under the contract meets the requirements of the contract. This plan shall apply to all activities related to the quality of items.

6.0 ENVIRONMENTAL PROTECTION REQUIREMENTS:

GENERAL

The Contractor shall conform to the Indian Environmental Laws, State Government Acts / Laws on Environment and Codes as applicable. The current national standards established by the Ministry of Environment and Forest, Government of India and other government agencies for control of environmental pollutants such as air, water, noise and visual impacts/aesthetics shall be followed for compliance during project construction.

The Contractor shall comply with all enactments which shall include but are not limited to:

- Environment Protection Act,1986
- Air (Prevention and control of Pollution) Act,1981
- Water (Prevention and Control of Pollution) Act,1974
- Cubbon Park Act
- Any other act as applicable in Karnataka

ANNEXURE - 1

1 KEY PERSONNEL:

The Contractor shall deploy the Key Personnel for the work as indicated below. The number of Key Personnel shall not be less than as specified.

(i) Project In charge (01 No.): The Project In-charge should be BE/B.Tech in Civil Engineering with 06 years of total experience and 3 years as Project in-charge or equivalent in Similar Nature of works.

(ii) Site Engineer (02 No.): The Site Engineer should be BE/B. Tech in Civil Engineering with 03 years of total experience and 1 years as Site Engineer or equivalent in Similar Nature of works.

(iii) Horticulture/ Landscaping Supervisor (02 No.): Horticulture/ Landscaping Supervisor should have any degree/graduation with 2 years' experience in Similar Nature of works.

NOTES:

a) The Contractor shall submit the CVs of the above key positions to the Engineer for his approval within 28 days of receipt of letter of Acceptance (LoA). (These documents are not required to be submitted at tender submission stage)

b) Non-deployment/ change of Key personnel during contract period will attract applicable penalty as stated in General Conditions of Contract/ Contract Data.

2 EQUIPMENT/ MACHINERY:

The Contractor shall deploy minimum Equipment and machinery as mentioned below either owned or to be made available on hire or lease for this work **as and when required.**

SL No	Type of Equipment required for the Work	Nos. to be deployed
1.	Tractor	1 Nos
2.	JCB	1 Nos
3.	Tipper	2 Nos
4.	Water tanker 5000 or 6000 Litters capacity	1 Nos
5.	Tools and tackles like spades, crow bars, picker, spans, water sprayer, storage tanks, tree cutters, lawn movers, etc.,	As required
6.	PVC/Rubber hose for watering	As required
7.	Water meter	As required

NOTES:

a) Plant and equipment to be mobilized for the work shall be in good serviceable condition.

b) The plant and machinery indicated above is minimum to be deployed at appropriate stage of the work. However, depending on the requirement to complete the work in the stipulated completion period, the tenderer should deploy additional machinery as circumstances warrant at no extra cost.

3 KEY DATES

The Contractor shall achieve the Key Dates (KD) for various stages of work, to be calculated from the date of signing the 'Contract Agreement' as furnished below. 'D' is the Date of Signing the contract Agreement.

KD No.	Description of stage of work	Duration in months from 'D'	Liquidated Damages (LD) for non-achievement of desired Key dates
KD-1	Preparation of Concept Plan/drawings for preliminary approval and after approval of concept Plan/drawings, submission of detailed Plans & designs/drawings for approval	D+01	Nil
KD-2	Completion of entire work except Annual Maintenance works under Schedule-E	D+05	LD @ Rs. 5,000/- per day of delay
KD-3	Completion of whole work including Annual Maintenance works under Schedule-E	D+17	LD @ Rs. 5000/- per day of delay

SECTION-I: TECHNICAL SPECIFICATIONS

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SECTION- S.01

1. GENERAL

1.1 General

1.1.1 These Specifications contained herein shall be read in conjunction with other tender documents.

Generally, all the works under this contract shall be carried out as per the specifications in latest unified common SR issued by KPWD (GoK), the latest edition of "Karnataka building Specification (KBS), Karnataka Roads & bridges specifications (KRBS), MoRT&H and CPWD Specifications including all correction slips & amendments issued up to date to the extent they are applicable to the works covered under this contract. The Specifications contained herein shall be read in conjunction with BoQ, GFC drawings and other terms & conditions of Contract. Further the specifications contained herein will supersede the provisions of the MORTH & CPWD specifications to the extent of their applicability.

1.1.2 The Work shall be carried out in accordance with the "Good for Construction" drawings and designs as would be issued to the Contractor by the Engineer duly signed and stamped by him. The Contractor shall not take cognisance of any drawings, designs, specifications, etc. not bearing Engineer's signature and stamp. Similarly, the Contractor shall not take cognisance of instructions given by any other Authority except the instructions given by the Engineer in writing.

1.1.3 The work shall be executed and measured as per metric units given in the Schedule of Quantities, drawings etc. (FPS units where indicated are for guidance only).

1.1.4 The specifications have been divided into different sections / sub-heads for convenience only. They do not restrict any cross-references. The Contractor shall take into account inter-relations between various parts of works/trades. No claim shall be entertained on the basis of compartmental interpretations.

1.1.5 Quality Assurance & Quality Control

i. The work shall conform to high standards of design and workmanship, shall be structurally sound and aesthetically pleasing. The Contractor shall conform to the Quality standards prescribed, which shall form the backbone for the Quality Assurance and Quality Control system.

ii. At the site, the Contractor shall arrange the materials, their stacking/storage in as per MORTH standards manner to ensure the quality. The Contractor shall provide all the necessary equipment and qualified manpower to test the quality of materials, assemblies etc., as directed by the Engineer. The tests shall be conducted at specified intervals and the results of tests properly documented. In addition, the Contractor shall keep appropriate tools and equipment for checking alignments, levels, slopes and evenness of the surfaces.

iii. Testing of Materials.

a) The Contractor shall transport the samples to the laboratory. In the event of the Contractor failing to arrange transportation of the samples in proper time the Engineer shall have them transported and recover two times the actual cost from the Contractor's bills.
b) All testing shall be performed in the presence of Engineer or his authorised representative. Testing may be witnessed by the Contractor or his authorised representative if permitted by the Test House. Whether witnessed by the Contractor or not, the test results shall be binding on the Contractor.

iv. The Engineer shall have the right at all times to inspect all operations including the sources of materials, procurement, its transportation, layout and storage of materials, all equipment including the concrete batching and mixing equipment, and the quality control system. Such an inspection shall be arranged and the Engineer's approval obtained prior to starting of the particular item of work. This shall however, not relieve the Contractor of his responsibilities. All materials which do not conform to these specifications shall be rejected. In the event of contractor not being able to arrange the material conforming to these specifications or in the event of failure of the contractor to get the sources approved within the agreed schedule submitted by contractor, the Engineer shall have the powers to cause the Contractors to purchase and use such materials from any particular source, as may, in the Engineer's opinion, be necessary for the proper execution of work.

1.1.6 Setting out of Works

The Contractor shall set out the Works indicated in the Conditions of Contract. The Contractor shall provide suitable stones with flat tops and build the same in concrete for temporary bench marks. All the pegs for setting out the Works and fixing the levels required for the execution thereof shall, if desired by the Engineer, likewise be built in masonry at such places and in such a manner as the Engineer may direct. The Contractor shall carefully protect and preserve all bench marks and other marks used in setting out the works. The contractor will make overall layout of complete work and get it checked from engineer.

(a) All the survey work except levelling shall work shall be carried out using total stations with one second accuracy. The levelling work shall be carried out using Auto level.

(b) The triangulation points given by Employer/Engineer before start of work shall be maintained during execution and handed over back to Employer / Engineer after completion of work.

1.1.7 Materials

i. Source of Materials

It shall be the responsibility of the contractor to procure all the materials required for construction and completion of the contract. The contractor shall indicate in writing the source of materials well in advance to the Engineer, after the award of the work and get it approved from the Engineer before commencing the work. If the material from any source is found to be unacceptable at any time, it shall be rejected by the Engineer.

ii. Quality

All materials used in the works shall be of the best quality of their respective kinds as specified herein, obtained from sources and suppliers approved by the Engineer and shall comply strictly with the tests prescribed hereafter, or where tests are not laid down in the specifications, with the requirements of the latest issues of the relevant Indian & other Standards.

iii. Sampling and Testing

All materials used in the works shall be subjected to inspection and test in addition to test certificates. Samples of all materials proposed to be employed in the permanent works shall be submitted to the Engineer at least 45 days in advance for approval before they are brought to the site.

Samples provided to the Engineer for their retention are to be labelled in boxes suitable for storage. Materials or workmanship not corresponding in character and quality with approved samples will be rejected by the Engineer.

Samples required for approval and testing must be supplied sufficiently in advance in required quantity and number to allow for testing and approval, due allowance being made for the fact that if the first samples are rejected further samples may be required. Delay to the works arising from the late submission of samples will not be acceptable as a reason for delay in completion of the works.

Materials shall be tested before leaving the manufacturer's premises, quarry or source, wherever possible. Materials shall also be tested at site and they may be rejected if not found suitable or in accordance with the specifications, notwithstanding the results of the tests at the manufacturer's works or elsewhere or test certificates or any approval given earlier.

The contractor will bear all expenses for sampling and testing, whether at the manufacturer's premises at source, at site or at any testing laboratory or institution as directed by the Engineer subject to the provisions of Clause 1.1.9 above.

iv. Dispatch of materials

Materials shall not be dispatched from the manufacturer's works to the site without written authority from the Engineer.

v. Test certificates

All manufacturer's certificates of test, proof sheets, etc showing that the materials have been tested in accordance with the requirement of these specifications and of the appropriate Indian Standards are to be supplied on request to the Engineer.

vi. Rejection

Any materials that have not been found to conform to the specifications or otherwise not acceptable to the Engineer will be rejected forthwith and shall be removed from the site by the Contractor within three days or as instructed by the Engineer.

1.1.8 Storing of Materials at site

a) All materials used in the works shall be stored on racks, supports, in bins, silos, go-downs, under cover etc., as appropriate to prevent deterioration or damage from any cause whatsoever to the entire satisfaction of the Engineer.

b) The storage of materials shall be in accordance with IS 4082 "Recommendation on stacking and storage or construction materials on site" and as per IS 7969 "Safety code for handling and storage of building materials".

c) The materials shall be stored in a proper manner at places at site approved by the Engineer. Should the place, where material is stored by the Contractor, be required by the Employer for any other purpose, the Contractor shall forthwith remove the material from that place and clear the place for the use of the Employer with in the time as communicated by the Engineer.

1.1.9 Workmanship

a) All works shall be true to level, plumb and square and the corners, edges and rises in all cases shall be unbroken and neat.

b) Any work not to the satisfaction of the Engineer or his representative will be rejected and the same shall be rectified, or removed and replaced with work of the required standard of workmanship.

1.2 Survey

1.2.1 Survey Work

a) The said work involves at the very start of work taking-over of reference point from the Engineer, establishment of control points by using DGPS double frequency and the accuracy of 1 in 50,000, triangulation points, bench marks, grid layout for structures maintaining horizontal and vertical control within the permissible limits, incorporating changes (if any), submission of full data in the tabulation form and survey drawings.

1.3 Applicable Codes, Standards & Publications for Structural work

a) The contractor shall make available at site all relevant Indian Standard Codes of practice, MORTH, CPWD and KPWD Specifications and IRS & IRC Codes as applicable and other relevant British/German/American Standards.

b) Wherever Indian Standards do not cover some particular aspects of design/construction, relevant British/German/American Standards will be referred to.

c) In case of discrepancy among provision, Provisions in BOQ, Technical Specifications, MORTH Specifications, Standard codes of practice, CPWD Specifications, KPWD Specifications, and, the order of precedence to be followed is as given below:

i. Provisions in BOQ
ii. Technical Specifications
iii. MORTH Specifications
iv. Standard Codes of Practice
v. CPWD Specifications
vi. KPWD specifications

1.4 Guarantees and Maintenance:

The Contractor shall guarantee and undertake to maintain and rectify the various components of the Civil Works for their successful performance for the periods as specified in other documents. The Contractor shall indemnify the Engineer for a similar period against any damage to property and injury to persons on account of any defective work or maintenance carried out by the Contractor. The format and text of the Guarantee and the Indemnity Bond shall be as followed in CPWD or as approved by the Engineer.

1.5 Approved Materials/Makes/Manufacturers /Likely suppliers:

Approved Materials/ Makes/ Manufacturers/ Likely suppliers are those which conform to the relevant Indian Standard Specifications, IS codes & other relevant codes and shall be approved by the Engineer of BMRCL. Wherever, no specific code of practice of IRS/IRC/BIS is applicable, the decision of Engineer shall be final and binding.

SECTION- S.02

2. EARTHWORK

2.1 General

These specifications shall be read in conjunction with the MORTH specification -2013 (fifth revision) and CPWD specifications -2009 with latest edition and correction slips up to date and other relevant specifications described in the section 1 of these specifications.

Results of the sub-surface investigations conducted at the Project Site are enclosed with the tender document. This information about the soil and sub-soil water conditions is being made available to the Contractor in good faith and the Contractor is advised to confirm / obtain details independently as may be considered necessary by him before quoting rates in the tender.

No claim whatsoever on account of any discrepancy between the sub-surface conditions that may be actually encountered at the time of execution of the work and those given in these Tender Documents shall be admissible to the Contractor under any circumstances whatsoever.

Excavation for all works and for materials required for filling shall be to the exact width, length and depth shown on the drawings or as directed by the Engineer. Where the nature of soil or the depth of the trench and season of the year, do not permit vertical sides, the contractor at his own expense shall put up the necessary shoring, strutting, planking or any other approved protection measures with due regard to the safety of personnel and works and to the satisfaction of the Engineer. The Contractor shall submit method statements for approval of Engineer demonstrating how this will be achieved at site. If required, driving of rolled section / sheet pile of suitable size into the soil shall be done to retain earth as directed by Engineer.

If excavation is carried out to greater depth than required beyond the level specified, for any reason whatsoever, such volume shall be made good by filling with PCC M10 having coarse aggregates 40 mm and below, graded, and brought to level to receive the levelling course below foundations. If excavation is carried out to greater width and length, such extra width and length shall be filled in by well consolidated earth / sand or if the Engineer thinks it is necessary for the stability of the work, by masonry or concrete as he may direct.

The last 200mm depth of excavation shall be done not earlier than 36 hours before laying the levelling course below foundations.

The Contractor shall make provision for all shoring, de-watering, dredging, bailing out or draining water whether subsoil or rain or other water and the excavation shall be kept free of water while concrete work is in progress and until the Engineer considers the work well set (Refer IS:3764 Safety Code for Excavation Work). The sides of trenches shall be kept vertical and the bottom level throughout or properly stepped as directed by the Engineer.

De-watering shall be carried out by suitable means with adequate stand-by arrangements as may be approved by the Engineer. The level of ground water shall be maintained at least 300 mm below the lowest level of excavation during the laying of foundations. The Contractor shall be deemed to have satisfied himself with regard to feasibility of all aspects of de-watering including site constraints due to existing structures. Though the method of de-watering is left to the contractor, he shall be required to submit method statement of de-watering scheme including requisite justifications to the Engineer and seek his prior written approval.

Approval of the Engineer however shall not relieve the contractor of the responsibility of adequacy and appropriateness of de-watering and protection arrangements for the quality and safety of the work. The contractor shall satisfy the Engineer as to the capacity of the drains or disposal site to take the required quantity and flow of water to be pumped out at various stages of excavation. The Contractor shall obtain necessary approvals of local bodies for discharging and disposal of the pumped out water. All the de-watering pumps shall therefore also have dedicated D.G. Power supply which shall start automatically in case of failure of electrical supply. Monitoring of water table shall be done using electronic probes or by other suitable methods.

The Contractor shall erect and maintain during progress of works temporary fences / barricading around the work area with all safety measures. The dangerous excavations, excavations near habitations, public movement areas and all works along the roads, shall be, provided with proper caution signs and marked with red lights, reflectors at night to avoid accidents. The contractor shall take all adequate protective measures to see that excavation operations do not affect or damage adjoining structures.

Excavation material required for filling shall be stacked or dumped where indicated by the Engineer. Excavated material not required for filling and any surplus material shall be removed and spread on the site anywhere within the premises and as directed by the Engineer or carted away from the site as directed by the Engineer. Dumping of this surplus material shall be in an environmental friendly manner using dumper with tarpaulin or suitable cover, placer etc. and according to the levels/grades as indicated by the Engineer. Levelling and Compaction, if required, at the dumping ground shall also be carried out. Necessary approval from the local authorities for carting and dumping surplus material is to be obtained by the contractor.

The Contractor shall notify to the Engineer when the excavation is completed and no base or Concrete or Masonry shall be laid until the Engineer has inspected and approved of the soil conditions obtained for each individual footing or the full raft area.

The Contractor shall ensure the stability of the excavation so that the surrounding ground and all adjoining structures and plants will be safe against settlement, subsidence and damage and that there is no risk of injury to personnel.

In case any underground structures / utilities that need to be protected (like underground sewer lines etc.) are encountered, the Contractor shall bring the same to the notice of the Engineer immediately and shall take all such steps as the Engineer may instruct for protection of such structures. Such protective measures shall be done by the Contractor. If any damage occur to such structures / utilities which were required to be protected during execution, the same shall be made good by contractor.

The Contractor is free, within the framework of rules and regulations of the local authorities, to deal with the surplus earth in any manner suitable to him. The Contractor may dispose off the surplus earth from the project site to a place/ places as may be permitted by the Engineer/ appropriate authority/ body. The transportation of the surplus earth shall be done by mechanical means only. The Contractor shall obtain necessary clearances/ permissions statutory or otherwise needed for the purpose. Dumpers may be used for transporting slushy, material excavated from pile boring / well boring / pile cap / Open Foundation with precautions for non-spillage of muck.

In case earth is used for backfilling in foundation and plinth, it shall be got approved from the Engineer. In the foundation the backfilling shall be done in layers not more than 200mm thick and shall be thoroughly watered and consolidated by approved method.

For open foundation resting on rock, if sound rock is located at shallow depths, the contractor is required to cut the rock (of all type or strength) to a depth so that open foundation with a minimum earth cushion of 500mm can be accommodated.

2.2 **Earthwork In Embankment**

The contractor shall be required to submit detailed method statement and get it approved from the Engineer, sufficiently in advances of each activity. The method statement shall contain all necessary information like methodology of operation, equipment to be used, appropriateness to the given conditions, sequence of operations, safety measures, etc.

The work is required to be completed in time. It is desirable that the contractor should judge the requirements of each it especially precast panels and decide the methodology of execution of these items so that the work can be executed in time.

The Contractor should explore the quarries nearby to make sure that the required quality of soil is available. The contractor should take approval of the source and the quality of soil before execution.

2.3 **Earthwork Including General Filling, Excavations, Dewatering and Backfilling**

SCOPE OF WORK

These Specifications cover the general requirements for earthwork and related works in different types of soils and rocks. The scope of work includes, but is not limited to; clearing of the site; general filling of site; compaction of fill to required degree; excavation and backfilling works; works related to stabilizing of sides of excavations; and necessary dewatering all within the intent of these specifications. The scope shall include provision of access to different parts of the excavated areas, adequate protective safely measures, and proper lighting and necessary signage arrangements.

General filling using approved material shall be done in areas as indicated in drawings. Or as directed by the Engineer. The general filling shall be done as per the specifications mentioned in the later of this chapter.

Final levelling/dressing of excavations shall also be included in the scope of work of this contract. The tenders should acquaint himself with the site for assessing the efforts necessary for completing the work as per these specifications.

The contractor shall be required to submit detailed method statement and get it approved from the Engineer, sufficiently in advance of each activity. The method statement shall contain all necessary information like methodology of operation, equipment to be used appropriateness to the given conditions, sequence of operations, safety measures, etc.

Unless specifically mentioned in these specifications, all work under this section shall be carried out in accordance with the stipulations and recommendations of the following BIS standards:

IS-1498: Classification and identification of soils for general Engineering purpose.
IS-2720 (Parts 1 to 4): Methods of tests of soils.
IS-3764: Safety code for excavation works.
IS-4081: Safety code for blasting and related drilling operations.
IS-9759: Guidelines for dewatering during construction.
IS-11134: Code of practice for setting out of Buildings.
IS-1200 (Part-1): Measurement of excavation works.
MORTH Specifications for Road Bridge Works (Technical Specification)
-Published by IRC.

Unless specifically mentioned in these specifications, it is to be understood that ALL expenses incurred by the CONTRACTOR including materials; tools; plants and equipment, labour, cartage and related testing etc., in executing the work according to these specifications are covered in rates quoted by him for the items of works.

2.4 **Construction Operations**

2.4.1 SITE CLEARING

Site clearing and grubbing work shall be carried out in total conformity with Clause 201, Section 200 of MORTH Specifications for Road and Bridge Works.

2.4.2 EMBANKMENT CONSTRUCTION

I. Description: These specifications shall apply to the construction of embankments including subgrades, earthen shoulders and miscellaneous backfills with approved material obtained from roadway and drain excavation, borrow pits or other sources. All embankments, subgrades, earthen shoulders and miscellaneous backfills shall be constructed in accordance with the requirements of these specifications and in conformity with the lines, grades and cross sections shown on the drains or as directed by the Engineer.

Materials and General requirements

II. Physical requirements

The materials used in embankments, subgrades, earthen shoulders and miscellaneous backfills shall be soil, moorum, gravel, a mixture of these or any other material approved by the Engineer. Such materials shall be free of logs, stumps, roots, rubbish or any other ingredient likely to deteriorate or affect the stability of the embankment/subgrade.

The following types of material shall be considered unsuitable for embankment:

(a) Material from swamps, marshes, and bogs:
(b) Peat, log, stump and perishable material; any soil that classifies as OL,OI,OH or Pt in accordance with IS:1498;
(c) Materials susceptible to spontaneous combustion;
(d) Material in a frozen condition;
(e) Clay having liquid limit exceeding 70 and Plasticity index exceeding 45;and
(f) Materials with salts resulting in leaching in the embankment.

III. Expansive clay exhibiting marked swell and shrinkage properties (“free swelling index” exceeding 50% when tested as per IS:2720-Part 40) shall not be used as a fill material, subgrade and top 500mm portion of the embankment just below subgrade shall be non-expansive in nature.

IV. Any fill material with a soluble sulphate content exceeding 1.9 grams sulphate (expressed as SO3) per liter when tested in accordance with BS: 1377 Test 10, but using a 2:1 water-soil ratio shall not be deposited within 500 mm or other distance described in the contract, of concrete, cement bound material or other cementitious materials forming part of the Permanent Works.

Materials with a total sulphate content (expressed as SO3) exceeding 0.5% by mass, when tested in accordance with BS: 1377 Test 9 shall not be deposited within 500 mm, or other distances described in the contract, of metallic items forming part of the Permanent Works.

V. The size of the coarse materials in the mixture of earth shall ordinarily not exceed 75mm when being placed in the embankment and 50mm when placed in the subgrade. However, the Engineer may at his discretion permit the use of material coarser than this also if he is satisfied that the same will not present any difficulty as regards the placement of fill material and its compaction to the requirements of these specifications. The maximum particle size shall not be more than two-thirds of the compacted layer thickness.

VI. Ordinarily, only the materials satisfying the density requirements given in TABLE-1 shall be employed for the construction of the embankment and the subgrade

TABLE 1. DENSITY REQUIRMENTS OF embankment/earth filling & SUBGRADE MATERIALS

Sl. No.	Type of work (Part 8)	Minimum lab unit weight when tested as per IS: 2720
1.	Embankment up to 3m Height, not subjected to Extensive flooding.	Not less than 15.2 KN/cum
2.	Embankment exceeding 3m Height or embankments of Any height subject to long Periods of inundation	Not less than 16.0 KN/cum
3.	Subgrade and earthen Shoulders/verges/backfill	Not less than 17.5 KN/cum

Notes: (1) This table not applicable for lightweight fill material e.g. cinder, fly ash, etc.
(2) The Engineer may relax these requirements at his discretion taking into account the availability of materials for construction and other relevant factors.
(3) The material to be used in subgrade should also satisfy design CBR at the dry unit weight applicable as per Table 2.

VII. General requirements:
The materials for embankment shall be obtained from approved sources with preference given to materials becoming available from nearby roadway excavation under the same Contract.
The work shall be so planned and executed that the best available materials are saved for the subgrade and the embankment portion just below the subgrade.

VIII. Borrow materials: Where the materials are to be obtained from designated borrow areas, the location, size and shape of these areas shall be as indicated by the Engineer and the same shall not be opened without his written permission. Where specific borrow areas are not designated by the Employer/the Engineer, arrangement for locating the source of supply of material for embankment and subgrade as well as compliance to environmental requirements in respect of excavation and borrow areas as stipulated, from time to time by the Ministry of Environment and forests, Govt. of India & the local bodies, as applicable shall be the sole responsibility of the contractor.
Borrow pits along the road shall be discouraged. If permitted by the Engineer, these shall not be

dug continuously Ridges of not less than 8m width should be left at intervals not exceeding 300m. Small drains shall be cut through the ridges to facilitate drainage. The depth of the pits shall be so regulated that their bottom does not cut an imaginary line having a slope of 1 vertical to 4 horizontal projected from the edge of the final section of the bank, the max depth in any case being limited to 1.5m. Also, no pit shall be dug within the offset width from the toe of the embankment required as per the consideration of stability with a minimum width of 10m.

Haulage of material to embankments or other areas of fill shall only when sufficient spreading and compaction plant is operating at the place of deposition.

No excavated acceptable material other than surplus to requirements of the Contract shall be removed from the site. Should the Contractor be permitted to remove acceptable material from the site to suit his operational procedure, then he shall make good any consequent deficit of material arising there from.

Where the excavation reveals a combination of acceptable and unacceptable materials, the Contractor shall, unless otherwise agreed by the Engineer, carry out the excavation in such a manner that the acceptable materials are excavated separately for use in the permanent works without contamination by the unacceptable materials. The acceptable materials shall be stockpiled separately.

The Contractor shall ensure that he does not adversely affect the stability of excavation or fills by the methods of stockpiling materials, use of plants or sitting of temporary buildings or structures.

The Contractor shall obtain representative samples from each the identified borrow areas and have these tested at the laboratory following a testing programme approved by the Engineer. It shall be ensured that the subgrade material when compacted to the density requirements as in Table 2 shall yield the design CBR value of the subgrade.

TABLE 2. COMPACTION REQUIREMENTS FOR EMBANKMENT & SUBGRADE

Sl. No.	TYPE OF WORK/MATERIAL	RELATIVE COMPACTION AS PERCENTAGE OF MAXIMUM LAB DRY DENSITY AS PER IS: 2720 (PART 8)
1.	Subgrade and earthen Shoulders and embankment	Not less than 97% of MDD
2.	Embankment	Not less than 95% of MDD
3.	Expansive Clays	Not allowed
	a) Subgrade and 500 mm Just below the portion Just below the Subgrade	

The Contractor shall submit the following to the Engineer at least 7 working days before commencement of compaction for approval:

(i) The values maximum dry density and optimum moisture content obtained in accordance with IS: 2720 (Part 7) or (PART 8), as the case may be, appropriate for each of the fill materials he intends to use.

(ii) A graph of density plotted against moisture content from which each of the values in (i) above of maximum dry density and optimum moisture content were determined.

(iii) The dry density-moisture content-CBR relationships for light, intermediate and heavy compactive efforts (light corresponding to IS: 2720 (Part 7), heavy corresponding to IS: 2720 (Part 8) and intermediate in-between the two) for each of the fill materials he intends to use in the subgrade.

Once the above information has been approved by the Engineer, it shall form the basis for compaction.

IX. Construction Operations

Setting out: After the site has been cleared to Clause 201 of MORTH specifications the work shall be set out to Clause 301.3.1 of MORTH. The limits of embankments/subgrade shall be marked by fixing batter pegs on both sides at regular intervals as guides before commencing the earthwork. The embankment/subgrade shall be built. Sufficiently wider than the design dimension so that surplus materials may be trimmed, ensuring that the remaining materials is to the desired density and in position specified and conforms to the specified side slopes.

X. Dewatering: If the foundation of the embankment is in an area with stagnant water, and in the opinion of the Engineer it is feasible to remove it, the same shall be removed by bailing out or pumping, as directed by the Engineer and the area of the embankment foundation shall be kept dry. Care shall be taken to discharge the drained water so as not to cause damage to the works, crops or any other property. Due to any negligence on the part of contractor, if any such damage is caused, it shall be the sole responsibility of the contractor to repair/restore it to original condition or compensate the damage at his own cost. If the embankment/ Earth filling is to be constructed under water, Clause 305.4.6 of MORTH specifications shall apply.

XI. Stripping and storing topsoil: In localities where most of the available embankment materials are not conductive to plant growth, or when so directed by the Engineer, the topsoil from all areas of cutting and from all areas to be covered by embankment foundation shall be stripped to specified depths not exceeding 150mm and stored in stockpiles of height not exceeding 2m for covering embankment slopes, cut slopes and other disturbed areas where re-vegetation is desired. Top soil shall not be unnecessarily trafficked either before stripping or when in a stockpile. Stockpiles shall not be surcharged or otherwise loaded and multiple handling shall be kept to a minimum.

XII. Compacting ground supporting embankment/subgrade:

Where necessary, the original ground shall be levelled to facilitate placement of first layer of embankment, scarified, mixed with water and then compacted by rolling so as to achieve minimum dry density as given in Table 2.

In case where the difference between the subgrade level (top of the subgrade on which pavement rests) and ground level is less than 0.5m and the ground does not have 97% relative compaction with respect to dry density as given in Table 300-2 of MORTH specifications, the ground shall be loosened up to a level 0.5m below the subgrade level, watered and compacted in layers in accordance with Clause 305.3.5 of MORTH and 305.3.6 of MORTH to not less than 97% of dry density as given in Table 2 below.

Where so directed by the Engineer, any unsuitable materials occurring in the embankment foundation shall be removed and replaced by approved materials laid in layers to the required degree of compaction.

Embankment or subgrade work shall not proceed until the foundations for embankment/subgrade have been inspected by the Engineer for satisfactory condition and approved.

Any foundation treatment specified for embankments especially high embankments, resting on suspect foundations as revealed by borehole logs shall be carried out in a manner and to the depth as desired by the Engineer. Where the ground on which an embankment is to be built has any of the material types (a) to (f) in Clause 305.2.1 of MORTH specifications, at least 500 mm of such material must be removed and replaced by acceptable fill material before embankment construction commences.

XIII. Spreading materials in layers and bringing to appropriate moisture content.
The embankment a subgrade material shall be spread in layers of uniform thickness not exceeding 200mm compacted thickness over the entire width of embankment by mechanical means, finished by a motor grader and compacted as per Clause 305.3.6.The motor grader blade shall have hydraulic control suitable for intial adjustment and maintain the same so as to achieve the specific slope and grade. Successive layers shall not be placed until the layer under construction has been thoroughly compacted to the specified requirements as in Table 300-2 and got approved by the Engineer. Each compacted layer shall be finished parallel to the final cross-section of the embankment.

XIV. Moisture content of the material shall be checked at the site of placement prior to commencement of compaction; if found to be out of agreed limits, the same shall be made good. Where water is to be added in such constructions, water shall be sprinkled from a water tanker fitted with sprinkler capable of applying water uniformly with a controllable rate of flow variable widths of surface but without any flooding. The water shall be added uniformly and thoroughly mixed in soil by blading, discing or harrowing until a uniform moisture content is obtained through the depth of the layer.

If the material delivered to the roadbed is too wet, it shall be dried, by aeration and exposure to the sun, till the moisture content is acceptable for compaction. Should circumstance arise, where owing to wet weather, the moisture content cannot be reduced to the required amount by the above procedure, compaction work shall be suspended.

Moisture content of each layer of soil shall be checked in accordance with IS: 2720 (Part 2), and unless otherwise mentioned, shall be so adjusted, making due allowance for evaporation losses, that at the time of compaction it is in the range of 1% to 2% below the optimum moisture content determined in accordance with IS: 2720(Part 7) or IS: 2720 (Part 8) as the case may be. Expansive clays shall, however, be compacted at moisture content corresponding to the specified dry density, but on the wet side of the optimum moisture content obtained from the laboratory compaction curve.
After adding the required amount of water, the soil shall be processed by means of graders, harrows, rotary mixers or as otherwise approved by the Engineer until the layer uniformly wet.
Clods or hard lumps of earth shall be broken to have a maximum size of 75 mm when being placed in the embankment and a maximum size of 50mm when being placed in the subgrade.

XV. Embankment and other areas of fill shall, unless otherwise required in the Contract or permitted by the Engineer, be constructed evenly over their full width and their fullest possible extent and the Contractor shall control and direct construction plant and other vehicular traffic shall be made good by the Contractor with material having the same characteristics and strength as the material had before it was damaged.

Embankments and other areas of unsupported fills shall not be constructed with steeper side slopes, or to greater widths than those shown in the Contract, except to permit adequate compaction at the edges before trimming back, or to obtain the final profile following any settlement of the fill and the underlying material.

Whenever fill is to be deposited against the face of a natural slope, or sloping earthworks face including embankments, cuttings, other fills and excavations steeper than 1 vertical on 4 horizontal, such faces shall be benched as per Clause 305.4.1 immediately before placing the subsequent fill.

All permanent faces of side slopes of Embankments and other areas of fill formed shall, subsequent to any trimming operations, be reworked and sealed to the satisfaction of the Engineer, on the slope or any other method approved by the Engineer.

XVI. Compaction: Only the compaction equipment approved by the Engineer shall be employed to compact the different material types encountered during construction. Smooth wheeled, vibratory, pneumatic tyred, sheep foot or pad foot rollers, etc. of suitable size and capacity as approved by the Engineer shall be used for the different types and grades of materials required to be compacted either individually or in suitable combinations.

The compaction shall be done with the help of vibratory roller of 80 to 100 KN static weight with plain or pad foot drum or heavy pneumatic tyred roller of adequate capacity capable of achieving required compaction.

The contractor shall demonstrate the efficacy the equipment he intends to use by carrying out compaction trials. The procedure to be adopted for these site trials shall first be submitted to the Engineer for approval.

Earthmoving plant shall not be accepted as compaction equipment nor shall the use of a lighter category of plant o provide any preliminary compaction to assist the use of heavier plant be taken into account.

Each layer of the material shall be thoroughly compacted to the densities specified in Table-2. Subsequent layers shall be placed only after the finished layer has been tested according to Clause 903.2.2 of MORTH and accepted by the Engineer. The Engineer may permit measurement of field dry density by a nuclear moisture/density gauge used in accordance with agreed procedure and the gauge is calibrated to provide results identical to that obtained from tests in accordance with IS: 2720 (Part 28). A record of the same shall be maintained by the density requirements and satisfaction of the Contractor. When density measurements reveal any soft areas in the embankment/subgrade/earthen shoulders, further compaction shall be carried out as directed by the Engineer. If inspite of that the specified compaction is not approved material, compacted to the density requirements and satisfaction of the Engineer.

2.5 SETTING OUT

After the site has been cleared and the general site filling work has been completed,

The limits of excavation shall be set out true to lines, curves, slopes, grades and sections as shown on the drawings or as directed by the Engineer.

2.6 SAFETY AND HOUSEKEEPING

The contractor shall be required to provide safety fence and precautionary display signs and lighting around the excavations, the design of which shall be got approved from the Engineer prior to implementation. The contractor shall prepare a safe and sound ramp, minimum 3.0m wide, leading to the lowest level of excavation in order to facilitate transportation of materials, inspection of excavation, and sub-strata, carrying equipment for plate load test, if so directed, and carrying out subsequent construction activities. The ramp shall be capable of carrying loaded trucks.

The contractor shall provide suitable drainage arrangement for draining out the sub-soil water from the site. The contractor shall also be required to suitably pump out rain water that collects in the excavations in order to keep the excavations dry to the satisfaction of the Engineer.

SECTION- S.03

3. STRUCTURAL CONCRETE: PLAIN & REINFORCED

3.1 Materials

Before bringing to the site, all materials for concrete including their source shall be approved by the Engineer. All approved samples shall be deposited in the office of the Engineer before placing orders for the materials with suppliers. The materials brought on to the works shall conform in every respect to the approved samples.

In case of change in type and/or source of any approved material, the contractor shall inform the Engineer and fresh samples shall be deposited with Engineer. Prior approval of Engineer will have to be obtained before using such material at site. The contractor shall check fresh consignment of materials as it is brought on to the works to ensure that they conform to the specifications and/or approved samples.

The Engineer shall have the option to have any of the materials tested at any time to find out whether they are in accordance with specifications at the contractor's expense. All bills vouchers and test certificates which in the opinion of the Engineer are necessary to convince him as to the quality of materials or their suitability shall be produced for his inspection when required.

Any material which has not been found to conform to the specifications and not approved by the Engineer shall be rejected forthwith and shall be removed from the site by the contractor within the time stipulated by the Engineer. In the event of contractor not being able to arrange the material conforming to specifications or in the event of failure of the contractor to get the sources approved within the agreed schedule submitted by contractor, the Engineer shall have the powers to cause the Contractors to purchase and use such materials from any particular source, as may, in the Engineer's opinion, be necessary for the proper execution of work.

Contractor shall also ensure that all constituents of exposed concrete shall be taken from same sources to achieve a uniform colour and texture.

3.1.1 Cement

3.1.1.1 The cement used shall be of the following types:

a) 43 grade Ordinary Portland Cement conforming to IS: 269 for RCC & PCC works.
b) 53 grade Ordinary Portland Cement conforming to IS: 269 for RCC & PSC works.
c) Slag Cement conforming to IS: 455 (Directly from the manufacturer).
(or)
Mixture of OPC 53 grade conforming to IS 269 and GGBS conforming to IS 12089 blended at site with maximum of 50% proportion of GGBS.

'Cement' means Ordinary Portland Cement conforming to IS 269 or slag cement conforming to IS 455 excluding mineral admixture/ additions as mentioned in para 5.2 of IS 456.

3.1.1.2 Whenever possible all cements of each type shall be obtained from one constant source throughout the contract. Cement of different types shall not be mixed together. Different brands of cement, or the same brand of cement from different sources, shall not be used without prior approval of the Engineer.

3.1.1.3 Packaged cement shall be delivered to the site in original sealed bags which shall be labelled with the weight, name of manufacturer, brand and type including date of manufacture. Cement received in torn bags shall not be used.

3.1.1.4 All cement shall be fresh when delivered. Cement older than 3 months from the date of manufacture shall not be used.

3.1.1.5 In fair faced elements, the cement used in the concrete for any complete element shall be from a single consignment. All cement for exposed concrete shall be from the same approved source and uniform in colour.

3.1.1.6 With each and every delivery of cement consignment, the contractor shall provide manufacturer's certificate that the cement conforms to the relevant Indian standard. The contractor shall provide complete facilities at site for carrying out the following tests:

a) Setting time by Vicat's apparatus as per IS: 4031 and IS: 5513.
b) Compressive strength of cement as per IS: 4031, IS: 650, IS: 10080.

3.1.1.7 Total chloride content in cement shall in no case exceed 0.05 percent by mass of cement. Also, total sulphur content calculated as sulphuric anhydride (SO3), shall in no case exceed 2.5 percent and 3.0 percent when tri-calcium aluminate per cent by mass is upto 5% or greater than 5% respectively.

3.1.2 Mineral Admixture

Use of any of the following mineral admixture as part replacement of Ordinary Portland Cement shall be permitted with the approval of Engineer over and above minimum cement content specified herein below for RCC work of different grades. Use of mineral admixture shall not be permitted in Prestressed concrete work.

a) Micro Silica conforming to ASTM C 1240
b) GGBS conforming to IS:12089

3.1.3 Aggregates

Aggregates from natural sources shall be in accordance with IS: 383. The contractor shall submit to the Engineer certificates of grading and compliance for all consignments of aggregate. In addition, at site from time to time, the contractor shall allow for carrying out such tests and for supplying test records to the Engineer. The aggregates shall be procured from approved sources only as directed by the Engineer from time to time.

For fair faced concrete, the contractor shall ensure that aggregates are free from iron pyrites and impurities, which may cause discoloration. Aggregates shall be stored on paved areas in different compartments according to their nominal size.

3.1.3.1 Fine Aggregates

The fine aggregate to be used for the work should be of River sand / Manufactured sand conforming to Zone – II as per IS – 383 / clause 2.1.1. The quality and acceptance criteria should be followed as per IS – 383 / 1970 with latest correction slips. The decision of Engineer in this respect shall be final. The silt content of fine aggregate used for trial mixes shall be recorded & the silt content in fine aggregate used shall not exceed 8%. The tests acceptance criteria for fine aggregates shall be same as per CPWD specifications.

3.1.3.2 Coarse Aggregates

The coarse aggregate shall be crushed stone.

Coarse aggregate obtained from crushed or broken stone shall be angular, hard, strong, dense, non-porous, durable, clean and free from soft, friable, thin plate, elongated or flaky pieces and any deleterious material.

Except where it can be shown to the satisfaction of the Engineer that a supply of properly graded aggregates of uniform quality can be maintained over the said period of the works, the grading of aggregates shall be controlled by obtaining the coarse aggregates in different sizes and blending them in correct proportions as and when required.

All coarse aggregates shall conform to IS: 383 and tests for conformity shall be carried out as per IS: 2386, Parts I to VIII.
The maximum size of coarse aggregates shall be such that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and fill the corners of formwork. Unless otherwise permitted by the Engineer the nominal maximum size shall not exceed 20 mm.

3.1.4 Water

Water used in the works shall be potable water and free from deleterious materials. Water used for mixing and curing concrete as well as for cooling and/or washing aggregate shall be fresh, clean and free from injurious amounts of oil, salts, acids, alkali, other chemicals and organic matter.

Water shall be from the source approved by the Engineer and shall be in accordance with clause 5.4 of IS: 456 However, chloride content in water shall not exceed 500 mg/litre and Sulphate content shall not be more than 4 percent.

Whenever the source of water changes, the water shall be tested for its chemical and other properties / impurities to ascertain its suitability for use in concrete for approval of the Engineer. No water shall be used until tested and found satisfactory.

3.2 **Blending Of Aggregates**

In order to obtain optimum workability, individual aggregates of nominal size 20 mm, 10 mm, 4.75 mm and 2.36 mm will be blended in such a way that the grading curve for all in aggregates will be a smooth curve from size 0.15 mm to 20 mm falling within the established envelope grading curve. Contractor shall establish envelope grading curve for each grade of concrete for given maximum size of aggregates and get it approved by Engineer before finalizing the mix design.

3.3 **Chemical Admixtures**

3.3.1 Chemical admixtures are not to be used until permitted by the Engineer. In case their use is permitted, the type, quantity/dosage and method of use of any admixture proposed by the Contractor shall be submitted to the Engineer for approval. The minimum cement content specified shall not be reduced on account of the use of the Admixtures.

3.3.2 The contractor shall further provide the information concerning each admixture to the Engineer as per Para 1012.1 of MORTH Specifications.

3.3.3 In reinforced concrete works, the chloride content of any admixture used shall not exceed 2 percent by weight of the admixture as determined in accordance with IS:6925 and the total chloride and sulphate contents in concrete mix shall not exceed 0.15 and 4.0 percent respectively by weight of cement.

3.3.4 The admixtures when used shall conform to IS: 9103. The suitability of all admixtures shall be verified by trial mixes.

3.3.5 The addition of calcium chloride to concrete containing embedded metal will not be permitted under any circumstances.

3.3.6 Retarding admixtures when used shall be based on ligneous-Phonates with due consideration to clause 5.2 and 5.3 of IS: 7861.

3.4 **Grade of Concrete**

The concrete is designated as follows:
Concrete M 35 / 20
The letter M refers to the mix
The number 35 represents the characteristic compressive strength of 15cm cubes at 28 days in MPa (Mega Pascal's: 1 MPa: 10 kg/cm2 approximately). M35 concrete thus has a characteristic strength of 350 kg/cm2. Other mix design will also be denoted in same way.
The number 20 represents the nominal size of the coarse aggregates in mm.

3.5 **Mix Design**

It is the complete responsibility of the Contractor to design the concrete mixes by approved standard methods as per IS 10262 and to produce the required concrete conforming to the specifications and the strength, workability requirements approved by the Engineer.

Mix Design once approved must not be altered without prior approval of Engineer. However, should the contractor anticipate any change in quality and/or change in source of future supply of materials than that used for preliminary mix design, he should inform the Engineer quite in advance and bring fresh samples sufficiently in advance, to carry out fresh trial mixes. Design mix will indicate by means of graphs and curves etc., the extent of variation in the grading of aggregates which can be allowed.
Notwithstanding to the stipulations in any code, limits of Cement content, Water/Cement ratio & mineral admixture shall be followed as per the Table 3.6.1.

Table 3.6.1 Limits of Water/ Cement ratio, Cement content & mineral admixtures in concrete mixes

S. No	Description of Structural items/ elements		Applicable code	Grade of Concrete	Max. W/C ration	Min. cement content (kg/m^3)	Type/ Grade of Cement	Use of mineral admixture
1.	Other than track supporting structures	PCC works	IS 456 & IS 2911 Part 1 Sec 2	M20	0.50	240	OPC 43 or OPC 53 grade conforming to IS:269	Not permitted.
		Pile		RCC M35	Sump 150mm to 180mm	400	Slag Cement conforming to IS 455 or site blending OPC+GGBS	In case slag cement not used, GGBS is permitted to be used for part replacement of OPC to max. 50% by weight.
		Pile cap/ footing	IS 456	RCC M35	0.45	340		
		RCC Columns		M35	0.45	340	OPC 43 or OPC 53 grade conforming to IS:269	Permitted to use micro silica/ silica fumes or GGBS as per IS 456 over and above minimum cement content as per mix design requirement.
		Slabs & beams		M35	0.45	340		

Maximum cementitious content in a mix which includes cement and mineral admixtures shall not exceed 500 Kg/m^3.

3.6 **Batching of Concrete Ingredients**

Unless permitted by the Engineer, all concreting shall be produced in computerized automatic weigh batching plant having printing facilities to print out records of each batch and installed at site. Under exceptional circumstances Ready Mixed Concrete (RMC) manufactured in computerized automatic weigh batching plant (as per specifications described above) by the approved agencies using the constituent materials from approved sources and approved mix design may also be used with prior approval from Engineer. However, in such cases the RMC production & transportation will have to be directly supervised by the qualified personnel of the contractor. (Contractor has to setup his own batching plant(s).RMC from market will be permitted only in exceptional circumstances and to be decided by the Engineer.)

3.7 **Placing Temperatures**

During extreme hot or cold weather, the concreting shall be done as per procedures set out in IS: 7861, Parts I & II.

The placing temperature of concrete shall be as low as possible in warm weather and care shall be taken to protect freshly placed concrete from overheating by sunlight in the first few hours of its laying. The time of day selected for concreting shall also be chosen so as to minimise placing temperatures. In case of concreting in exceptionally hot weather the Engineer may at his discretion specify the use of ice either flaked and used directly in the mix or blocks used for chilling the mixing water. All salt and saw dust shall be removed from ice before use. Quality of water used for making ice shall confirm to IS: 456.

3.8 **Transporting, Placing, Compacting and Curing**

Transporting, placing, compacting and curing of concrete shall be in accordance with IS: 456.

3.8.1 Transporting

The method of transportation used should efficiently deliver the concrete to the point of placement without significantly altering its desired properties with regard to water-cement ratio, slump, segregation and homogeneity.

The mix after discharging from the automatic computerized weigh batching plant/mixer shall be transported by agitating transit mixers, buckets, pumps etc. or as approved by the engineer without causing segregation and loss of cement slurry and without altering its desired properties with regard to water cement ratio, slump, air content, cohesion and homogeneity. It should be ensured that the concrete is moved to its final destination before it attains the initial set.

The revolving-drum truck bodies of approved make shall be used for transporting the concrete. The number of revolutions at mixing speeds, during transportation, and prior to discharge shall be specified and agreed upon. Reliable counters shall be used on revolving-drum truck units. Standard mixer uniformity tests, conforming to ASTM standards C 94 “Standard Specifications for Ready Mix Concrete”, shall be carried out to determine whether mixing is being accomplished satisfactorily.

3.8.2 Water, Admixtures and Slump

The amount of water required for proper concrete consistency shall take into account the rate of mixing, length of haul, time of unloading, and ambient temperature conditions.

Additions of water to compensate for slump loss should not be resorted to nor should the design maximum water-cement ratio be exceeded. Additional dose of retarder be used to compensate the loss of slump, when permitted by Engineer. Retempering water shall not be allowed to be added to mixed batches to obtain desired slump.

3.8.3 Placing

The method of placing shall be such as to prevent segregation by providing windows in the formwork for pouring concrete or by Tremie pipe. The thickness of horizontal layers shall not exceed 300 mm. High velocity discharge of concrete causing segregation of mix shall be avoided. The concrete shall be placed in the forms gently in such a way that the segregation does not take place. The concrete shall not be dropped from a height exceeding 2.0m. Each layer of concrete shall be compacted fully before the succeeding layer is placed and separate batches shall follow each other close enough to ensure that the succeeding layer shall be placed and fully compacted before the layer immediately below has taken initial set. (The temperature to be maintained during pouring of concrete shall be refer to IS 7861 part 1 & 2.)

For piers/columns and pier heads, portal columns, concreting is to be carried out in single stage i.e in first stage concreting will be from kicker to just below pier head bottom and second stage of concreting will be pier head including shear key and cross girder (for all heights by using tremie / pumps at the rate not more than 1.5m / hr or as approved by the Engineer).

Concreting of any portion or section of the work shall be carried out in one continuous operation and no interruption of concreting work will be allowed without approval of the Engineer.

3.8.4 Compaction

Internal (needle) and surface (screed board) vibrators of approved make shall be used for compaction of concrete.

Internal vibrators shall be used for compaction of concrete in foundations, columns, buttresses arch section, slabs etc, and if required surface vibrators shall also be used. Depending on the thickness of layer to be compacted, 25 mm, 40 mm, 60 mm and 75 mm dia. internal vibrators will be used. The concrete shall be compacted by use of appropriate diameter vibrator by holding the vibrator in position until:

i. Air bubbles cease to come to surface.
ii. Resumption of steady frequency of vibrator after the initial short period of drop in the frequency, when the vibrator is first inserted.
iii. The tone of the vibrated concrete becomes uniform.
iv. Flattened, glistening surface, with coarse aggregates particles blended into it appears on the surface.
v. After the compaction is completed, the vibrator should be withdrawn slowly from the concrete so that concrete can flow in to the space previously occupied by the vibrator. To avoid segregation during vibration the vibrator shall not be dragged through the concrete nor used to spread the concrete. The vibrator shall be made to penetrate, into the layer of fresh concrete below if any for a depth of about 150 mm. The vibrator shall be made to operate at a regular pattern of spacing. The effective radii of action will overlap approximately half a radius to ensure complete compaction.
vi. To secure even and dense surfaces free from aggregate pockets, vibration shall be supplemented by tamping or rodding by hand in the corners of forms and along the form surfaces while the concrete is plastic.
vii. A sufficient number of standby vibrators shall be kept readily accessible to the place of deposition of concrete to assure adequate vibration in case of breakdown of those in use.
viii. Form vibrators whenever used shall be clamped to the sides of formwork and shall not be fixed more than 450 mm above the base of the new formwork and concrete shall be filled not higher than 230mm above the vibrator. The formwork must be made specially strong and watertight where this type of vibrator is used.

Care must be taken to guard against over vibration especially where the workability of the concrete mix is high since this will encourage segregation of the concrete.

ix. Plain concrete in foundations shall be placed in direct contact with the bottom of the excavation, the concrete being deposited in such a manner as not to be mixed with the earth. Plain concrete also shall be vibrated to achieve full compaction.

x. Green concrete shall be protected from the direct sun light and hot winds as per the methods approved by Engineer. Such method should be got approved from the Engineer before start of concreting operations.

Concrete placed below the ground shall be protected from falling earth during and after placing. Concrete placed on ground containing deleterious substances shall be kept free from contact with such ground and with water draining there from during placing and for a period of seven days or as otherwise instructed thereafter. Approved means shall be taken to protect immature concrete from damage by debris, excessive loading, abrasion, vibrations, deleterious ground water, mixing with earth or other materials, and other influences that may impair the strength and durability of the concrete.

3.8.5 Field Control

Sampling at both, truck discharge and point of final placement shall be employed to determine if any changes in the slump and other significant mix characteristics occur. However, for determining strength of concrete, cubes shall be taken from the placement end of line.

3.8.6 Curing

i. Curing of concrete shall be complete and continuous using potable water free from chlorides and sulphates water that is free of harmful amounts of deleterious materials that may attach, stain or discolor the concrete as per IS 456. Minimum wet curing will be for seven days by ponding water followed by moist curing by spraying water which shall be maintained up to a total period of at-least 14 days from the date of casting.

ii. Immediately after compaction and completion of any surface finishes the concrete shall be protected from the evaporation of moisture by means of polythene sheathing, wet hessian or other material kept soaked by spraying. As soon as the concrete has attained a degree of hardening sufficient to withstand surface damage moist curing shall be implemented and maintained for a period of at least 14 days after casting.

iii. Method of curing and their duration shall be such that the concrete will have satisfactory durability and strength and members will suffer a minimum distortion, be free from excessive efflorescence and will not cause undue cracking in the works by shrinkage.

iv. Steam curing with approved methodology can be adopted if required, for precast segments.

v. Water based curing compounds may be permitted with specific approval of Engineer. However it is required to be proved that by using such curing compound, the concrete shall not have less strength than concrete cured by water curing. It shall not leave any discolorations on the structural concrete. It shall be applied as per the provisions of clause 1713.3 of MORTH specifications.

3.9 **Cracks**

If cracks, which in the opinion of the Engineer may be detrimental to the strength of the construction, develop in concrete construction, the Contractor at his own expense shall test the structure. If under such test loads the cracks develop further, the Contractor shall dismantle the construction, carry away the debris, replace the construction and carry out all consequential work thereto.

If cracks develop in the concrete construction, which in the opinion of the Engineer, are not detrimental to the stability of the construction, the Contractor at his own expense shall grout the cracks with neat cement grout or with other composition as directed by Engineer and also at his own expense and risk shall make good to the satisfaction of the Engineer. The Engineer's decision as to the extent of the liability of the Contractor in the above matter shall be final and binding.

External crack width shall be restricted to 0.2mm on all viaduct structures. If crack width is more than 0.2mm or in the opinion of Engineer may be detrimental to concrete construction, the contractor should test and make good the structure at his own expense.

3.10 **Defective Concrete**

Should any concrete be found honeycombed or in any way defective, such concrete shall be cut out partially or wholly by the Contractor and made good at his own expense. If Engineer feels that repaired structure will not be having same strength or shape or uniformity with other exposed surface as original desired structure / original structure, the same shall be rejected by Engineer and required to be dismantled and disposed off by contractor, as instructed by Engineer. Decision of the Engineer shall be final binding in this regard.

3.11 **Exposed Faces, Holes and Fixtures**

On no account shall concrete surfaces be patched or covered up or damaged concrete rectified or replaced until the Engineer or his representative has inspected the works and issued written instructions for rectification. Failure to observe this procedure will render that portion of the works liable to rejection.

Holes for foundation or other bolts or for any other purposes shall be moulded and steel angles, holdfasts or other fixtures shall be embedded, according to the drawing or as instructed by the Engineer.

3.12 **Finishes**

Unless otherwise instructed, the face of exposed concrete placed against formwork shall be rubbed down immediately on removal of the formwork to remove irregularities. The face of concrete for which formwork is not provided other than slabs shall be smoothed with a float to give a finish equal to that of the rubbed down face, where formwork is provided. The top face of a slab which is not intended to be covered with other materials shall be leveled and floated to a smooth finish at the levels or falls shown on the drawings or as directed. The floating shall be done so as not to bring an excess of mortar to the surface of the concrete. The top face of a slab intended to be surfaced with other material shall be left with a spaded finish. Faces of concrete intended to be plastered shall be roughened by approved means to form of a key.

3.13 **Pre-Cast Concrete**

Scope

I. The scope of the work covers supply of all labour, materials and equipment and performing all operations required for manufacture and transportation of pre-cast reinforced cement concrete items, hoisting and fixing them in position to correct lines and levels, pointing and finishing, cutting, bending and fixing of lifting hooks, etc, complete and testing of pre-cast elements by the contractor. Structural steel embedment, if any, as indicated in the working drawings shall also be embedded in concrete.

II. Pre-cast reinforced cement concrete elements shall be manufactured in casting yards near project site. Contractor shall arrange for necessary sheds for casting, curing tank, all facilities required during and after manufacture, sufficient handling equipment for curing the cast pieces and for stacking. In special circumstances contractor may be permitted by the engineer at his discretion to manufacture and supply the elements from a centralised factory, which is fully equipped for the purpose and total quality control measures are undertaken. In such a case, contractor will allow engineer or his representative access to inspect the works and check regarding the quality of production, curing, handling and transporting.

III. Detailed working drawings and process of manufacture for each type of precast element will be issued from time to time by the contractor and got approved unless otherwise specified in the contract as work progresses. The mix of concrete to be used and details of reinforcement shall be as given in drawings.

3.14 **Concrete and concrete materials**

I. Material requirement viz. Coarse and fine aggregates, cement, reinforcement, water and admixtures etc, shall be in accordance with the specifications specified in clause 3.3 to 3.5 of this specification.

II. All concrete work shall follow the design mix and specifications in accordance with specifications for cement concrete (plain, reinforced) and pre-stressed as detailed herein above and shall be to the grading as shown on drawings.

3.14.1 Form work

Forms or mould for pre cast elements shall be made up of steel, fibre glass or brick with plaster of sufficient strength so as to be rigid and obtain a smooth surface after the form are struck. In certain circumstances the engineer may permit use of well-maintained concrete preformed moulds of sufficient hardness and good finish for large pre-cast structures. The contractor shall submit detailed drawings of formwork for the approval of the engineer. Finishing with cement mortar shall not be allowed. Vibration shall not be carried with form vibrators mounted on to the formwork. In addition, rod tamping shall be done (in other than concrete moulds) to ensure that the concrete material is evenly spread and fills all inaccessible regions. When required, surface floating vibrators shall be used for surface finish.

3.14.2 Pre- casting

I. Pre-cast elements shall be plain/reinforced/pre-stressed cement concrete of grades as indicated in construction drawings. Workmanship in casting shall be similar to that specified in cement concrete section of specifications.

II. Pre-cast concrete shall remain in moulds for 3 days before being stripped except in case of steam curing and during this period the exposed face shall be covered with mats or sacks and constantly kept wet; besides the moulds shall be shielded from direct sunlight.

3.15 Curing and Handling

I. After removal from moulds, curing of pre-cast elements shall be carried out for a period of 14 days from the day of casting. This shall be done by providing a water tank of adequate size nearby, wherein the pre-cast element shall be immersed. Each pre-cast element shall be suitably marked to indicate the top of the member, its location and orientation in the structure and date of casting. The contractor shall also maintain a register indicating the date of casting and various members, curing, transportation to site and their erection therein. Alternatively, steam curing may be permitted by the engineer. The procedure adopted and equipment used should be got approved by the engineer. Once they are approved, the procedure shall be strictly followed by the contractor. The general procedure is indicated below:

Steam curing shall be done under suitable enclosure or chamber which would contain live steam with minimum moisture or heat losses. The initial application of steam would be from two to four hours after final placement of concrete to allow the initial set of concrete to take place. When retarders are used, the waiting period of application of steam would be increased as from four to six hours.

The steam shall have relative humidity of 100% to prevent loss of moisture and to provide excess moisture for proper hydration of cement. The steam shall not be applied directly on concrete. While applying steam, the ambient air temperature shall increase at a rate not exceeding 5^0 C, per hour until a maximum temperature of 60^0 C to 70^0C is attained. This temperature shall be maintained until concrete reaches the required strength. When steam curing is discontinued, the ambient temperature shall not be permitted to fall at the rate exceeding 5^0C per hour till the temperature reaches 10^0C above the temperature of the air to which concrete shall be exposed has been reached. The cured concrete shall not be exposed to temperature below freezing for at least for at least six days after casting. But it will be good practice if the concrete elements are spray cured for a period of at least 5 days after removing from steam chamber/enclosure.

II. After stripping, the pre-cast elements shall be stacked for a period not less than 30 days to protect them from cracks and damages which may be caused by self-load. To ensure minimum damage during handling, the contractor shall provide suitable cranes capable of lifting heavy pieces on to curing tanks, stacking shed and at places of erection. The responsibility for any damage, for whatever reason, shall be that of the contractor and he shall replace damaged pieces with new ones.

SECTION- S.04

4. FORM WORK

4.1 **General**

These specifications shall be read in conjunction with the MORTH specifications-2013 (fifth revision) and CPWD specifications - 2009 with correction slips / amendments upto date, and other relevant specifications described in the section 1 of these specifications.

For Precast segments suitable steel form work is to be used unless otherwise specified by Engineer.

4.2 Formwork for Curved Surfaces

4.2.1 The contractor shall interpolate intermediate sections as necessary and shall construct the forms so that the curvature will be continuous between sections. Where necessary to meet requirements for curvature, the form lumber shall be built up of laminated splices cut to make tight, smooth form surfaces.

4.2.2 After the forms have been constructed, all surface imperfections shall be corrected and all surface irregularities at matching faces of form material shall be dressed to the specified curvature.

4.3 Erection of Formwork

Surfaces of forms in contact with concrete shall be oiled with a mould oil of approved quality form releasing agent. If required by the Engineer the contractor shall execute different parts of the work with different mould oils to enable the Engineer to select the MoRT&H suitable. The use of mould oil which results in blemishes of the surface of the concrete including diesel, burnt oil and any other lubricating oil shall not be allowed. Mould oil shall be applied before reinforcement has been placed and care shall be taken that no oil comes in contact with the reinforcement while it is being placed in position. The formwork shall be kept thoroughly wet during concreting and the whole time that is left in place.

4.3.1 Immediately before concreting is commenced, the formwork and other related arrangements shall be carefully examined to ensure the following:

a Removal of all dirt, shavings, sawdust and other refuse by brushing, washing and compressed air / vacuum cleaning.
b The tightness of joints between panels of sheathing and between these and any hardened core.
c The correct location of tie bars, bracing and spacers, and especially connections of bracing.
d. Adequate cover blocks are in place
e. Straightness and plumbness of the form work
f. Side supports / restraints for the form work are enough and robust
g. Construction joint (wherever applicable) is properly prepared
h That all wedges are secured and firm in position.
i That provision is made for traffic on formwork not to bear directly on reinforcing steel.
j. Pouring platform along with its approach from ground is robust and safe for workers movement.
k. Arrangement for vibrators for compaction of concrete
l. Sequence of concrete pouring is well defined and is agreed upon by the Engineer and is explained to concrete pouring team
m. The Pouring area is well lit.
n. Curing arrangements are well planned and agreed upon by the Engineer.
o. The green concrete protection measures from sun & rain etc. are in place.

4.3.2 Formwork shall be continuously watched during the process of concreting. If during concreting any weakness develops and formwork shows any distress the work shall be stopped and remedial action as directed by the engineer shall be taken.

4.3.3 Staging for portal girder and cross girder (in station zone) shall be in the form of portal frame. It shall be ensured that minimum two lanes of traffic with a restricted height of 4.5m can ply underneath it with adequate protection to portal legs from moving traffic.

4.4 Formwork for Precast/ Pre-stressed Concrete

- The provisions in this section shall be considered supplementary to the general provisions stated above and additional Technical Specifications for pre cast segments. Precast concrete members and panels shall be made in accurately constructed moulds, on a properly prepared casting bed. All aspects of the making, curing and erection of precast units shall be subject to the approval of the Engineer.

The contractor shall submit detailed drawings of formwork for the approval of the Engineer. Finishing with cement mortar shall not be allowed.

- The formwork should be so designed that it does not restrain the shrinkage movements and possible shortening due to pre-stress of the concrete. The formwork shall be of sturdy construction with special considerations to shutter vibrators when used. All edges and joints of the formwork should be designed and sealed so that no cement grout can escape and there is no wedging or keying to the concrete. The effect of curing on the formwork should be given special consideration. Depending on care, curing, erection and maintenance of the formwork after stripping, the following number of uses can be made with different types of formwork.

Plywood with timber backed formwork	-	As per satisfaction of Engineer
Steel moulds	-	-do-

Number of uses of shuttering to be as per approval of the Engineer

In case concrete moulds can be satisfactorily provided by the contractor, the Engineer's approval shall be obtained before use on the works.

Stripping

As soon as the pre-cast units have attained sufficient strength, the formwork shall be stripped. The pre-cast unit shall be lifted uniformly out of the formwork without being subjected to tilting or restraint effects.

SECTION- S.05

5. REINFORCEMENT

5.1 General

These specifications shall be read in conjunction with the MORTH specifications -2013 (fifth revision) and CPWD specifications -2009 with correction slips / amendments upto date, and other relevant specifications described in the section 1 of these specifications.

Any steel specified for reinforcement shall conform in every respect to the latest relevant Indian Standard Specifications and shall be of tested quality under the ISI Certification Scheme.

All reinforcement work shall be executed in conformity with the drawings supplied and instructions given by the Engineer and shall generally be carried out in accordance with the relevant Indian Standard Specifications IS: 2502- Bending and Fixing of Bars for Concrete Reinforcement.

Reinforcing steel shall be of HYSD (Grade Designation Fe: 500) Conforming to IS: 1786, only TMT bar shall be supplied and used as reinforcement steel for the permanent work

The reinforcement steel shall be from primary producers and no re-rolled steel shall be supplied and used. The contractor will produce copy of original challan / voucher as a proof of having purchased the steel reinforcement from approved manufacturers or their authorised distributors.

The steel reinforcement shall be brought to the site in bulk supply of 10 tonnes or more as decided by the Engineer. All reinforcement shall be stored horizontally above ground level on platforms, skids or other approved supports, clear of any running or standing water. Proper drainage of platform shall be provided. Steel reinforcement shall be stored in such a way as to avoid distortion and prevent deterioration by corrosion. Bars of different diameters shall be stored separately. A record shall be kept of the batch numbers of reinforcement deliveries in such a form that the part of works in which particular reinforcement is used can be readily identified.

5.2 Inspection & Testing

Every bar shall be inspected before assembling on the works and any defective pitted, brittle, excessively rusted or burnt bars shall be removed. Cracked ends of bars shall be cut out.

No work shall be commenced without the Engineer’s approval of the bar bending schedule.

Manufacturer's test Certificate shall be supplied for each lot of supply brought at site of work by the contractor.

Specimens sufficient for three Tensile Tests for each different size of bar, bend and rebend physical tests for each consignment delivered shall be sampled and tested by the Contractor before use at site. Test results shall be duly supported by Graph. Batches shall be rejected if the average results of each batch are not in accordance with the relevant specifications / codes and the rejected steel shall be removed from the site of work by the contractor within a week’s time from the written order from the Engineer.

5.3 Bar Bending and Bar Bending Schedule

All bars will be carefully and accurately bent by approved means in accordance with IS: 2502, and relevant drawings. It shall be ensured that depth of crank is correct as per the bar cutting and bending schedule. Bent bars are not straightened for use in any manner that will injure the material. No laps should be allowed for Pre-cast segments and Piers, Pier caps, portals, pier-arm, I Girders and portal beams. However mechanical couplers are to be used.

Prior to starting bar bending work, the Contractor shall prepare bar bending schedule from the structural drawings supplied to him and get the same approved by Engineer. Any discrepancies and inaccuracies found by the Contractor in the drawings shall be immediately reported to the Engineer whose interpretation and decision there to, shall be final.

5.4 **Couplers for reinforcement above 16 mm in dia (including 16mm) & Laps**

As far as possible bars of the maximum length available shall be used. For bars having larger diameter more than 16 mm mechanical couplers shall be provided (except for pile reinforcement) at the locations approved by the Engineer and no lap shall be permitted.

Welding in lieu of lap is not permitted unless specified in the drawings or as instructed by the Engineer.

5.5 **Spacing, Supporting and Cleaning**

All reinforcement shall be placed and maintained in the positions shown on the drawings.

The Contractor shall provide approved types of supports for maintaining the bars in position and ensuring required spacing and correct cover of concrete to the reinforcement as specified on the drawings. Cover blocks of required shape, size and strength M.S. Chairs and spacer bars shall be used to ensure accurate positioning of reinforcement.

Cover blocks shall be cast well in advance and shall consist of approved proprietary pre-packaged free flowing mortars having the strength same as that of concrete for the member for which they are to be used. They shall be circular in shape for side cover and square for bottom cover. Cover blocks shall be cast and compacted using plate vibrator or any other approved method and shall be cured so as to achieve the desired strength.

5.6 **Protection of Reinforcement**

Bars must be cleaned before concreting commences of all scale, rust or partially set concrete which may have been deposited there during placing of previous lift of concrete. Any reinforcement which is certified as corroded by the Engineer shall be removed from the site.

18 gauge GI binding wire (2 ply) in diamond form at each reinforcement junction shall be used for binding reinforcement as well as for tying cover blocks with reinforcement.

Bars must be cleaned before concreting commences of all scale, rust or partially set concrete which may have been deposited there during placing of previous lift of concrete. Any reinforcement which is certified as corroded by the Engineer shall be removed from the site.

18 gauge GI binding wire (2 ply) in diamond form at each reinforcement junction shall be used for binding reinforcement as well as for tying cover blocks with reinforcement.

SECTION- S.06

6. MISCELLANEOUS

6.1 ROAD WORKS

The road work items will be executed as per the BOQ description and latest MORTH specification as directed by Engineer.

These Specifications contained herein shall be read in conjunction with other tender documents.

Generally the work shall be carried out as per the latest edition of “Specifications for Road and Bridge works” of Ministry of Road Transport & Highways (MORT&H) as published by Indian Roads Congress (MORT&H fifth revision published by the Ministry on 03-01-2013) and CPWD specifications - 1996/2002 with correction slips & amendments upto date to the extent they are applicable to the works covered under scope of works. However, the provision of MORTH specifications takes precedence over CPWD specifications. Further the specifications contained herein will supersede the provisions of the MORT&H & CPWD specifications to the extent of their applicability.

The Work shall be carried out in accordance with the "Good for Construction" drawings and designs as would be issued to the Contractor by the Engineer duly signed and stamped by him.

6.2 Test and Standards of Acceptance

The materials shall be tested in accordance with these specifications and shall meet the prescribed criteria. The manufacturer/supplier shall furnish the requisite certificates from the recognized testing laboratory in India having NABL Certification or abroad.

6.3 Reinforced Earth Structure:

Generally, the work shall be carried out as per the Cl. 3100 of latest edition of “Specifications for Road and Bridge works” of Ministry of Road Transport & Highways (MORT&H) as published by Indian Roads Congress (MORT&H fifth revision published by the Ministry on 03-01-2013).

SECTION – 7

7. MASONRY WORK

7.1 Block work

7.1.1 Hollow and solid concrete blocks

Shall conform to the requirements of IS: 2185 Specifications for hollow and solid concrete blocks except with regard to the mix of cement concrete and sizes of aggregates, which shall be as, indicted. Hollow bricks shall be sound, free from cracks, broken edges, honeycombing and other defects that would interfere with the proper placing of block or impair the strength or performance of construction.

Concrete masonry building units shall be made in size and shapes to fit different construction needs. They include stretcher, corner, double corner or pier, jamb, header, bull nose, and partition blocks, and concrete floor units.

Concrete block hollow (open or closed cavity) or solid shall be referred to by its nominal dimensions.

The nominal dimensions of concrete blocks shall, as follows:

Length: 400,500, or 600mm
Height: 200 or 100mm
Width: 50, 75,100,150,200,250 or 300mm

In addition, blocks shall be manufactured in half-lengths of 200,250, and 300mm to correspond to the full length. The maximum variation in the length of the units shall be not more than+/- 5mm and maximum variation in height and width of unit, not more than +/- 3.

7.1.1.1 Physical requirements

a) Compressive strength

The average crushing strength of eight blocks, when determined in accordance with IS: 2185 shall not less than as specified in Table below:

Type	**Grade**	**Density of block kg/CuM**	Minimum average Compressive strength of units N/Sq.mm**.**	**Minimum strength of individual units N/Sq.mm**
Hollow (open & closed cavity) load bearing unit	A(3.5)	Not less than 1500	3.5	2.8
	A(4.5)		4.5	3.6
	A(5.5)	Not less than 1500 but not less than 1000	5.5	4.4
	A(7.0)		7.0	5.6
	A(2.0)		2.0	1.6
	A(3.0)		3.0	2.4
	A(5.0)		5.0	4.0
Hollow (open & closed cavity) No load bearing units	C(1.5)	Less than 1500 but not less than 1000	1.5	1.2
Solid load	D(5.0)	Not less than 1800	5.0	4.0
Bearing Units	D(4.0)		4.0	3.2

b) Drying Shrinkage: The drying shrinkage of the blocks (average of three blocks), when unrestrained, shall be determined in accordance with IS: 2185 and shall not be exceed 0.1 per cent.
c) Moisture Movement: The moisture movement (average of three blocks) when determined in the manner described in IS: 2185 shall not exceed 0.09 per cent.
d) Water Absorption: The water absorption (average of three blocks) when determined in the manner described in IS: 2185 shall not be more than 10 per cent by mass.
e) Face shells and webs shall increase in thickness from the bottom to the top of the unit. Depending upon the core molded, used, the face shells and webs shall flare and tapered or straight tapered, the former providing a wider surface for mortar. The thickness of the face shell and web shell is not being less than the values given in the KPWD Specifications.
f) Subject to the tolerances specified in2.1.1 the faces of masonry units shall be flat and rectangular, opposite face shall be parallel, and all arises shall be square. The bedding surfaces shall right angles to the faces of the blocks.
g) Blocks with special faces shall be manufactured and supplied as directed by the Engineer.

7.1.1.2 Curing and drying

The blocks shall be cured in an immersion tank or in a curing yard and shall be kept continuously moist for at least 14 days. When the blocks are cured in an immersion tank, the water of tank shall be changed at least every four days.

After curing, the blocks shall be dried in shade before being used on the work. They shall be stacked with voids horizontal to facilitate through passages of air. The blocks shall be allowed to complete their initial shrinkage before they are laid in wall.

7.1.1.3 Construction of Masonry

For single storied building, the hollow of blocks in foundations and basement masonry shall be filled up with sand and only the top foundation course shall be of solid blocks. But for two or more storied buildings, solid concrete blocks shall be used in foundation courses, plinth, and basement wall, unless otherwise indicated. If hollow blocks are used, their hollows shall be filled up with cement concrete 1:3:6 using 12.5mm nominal size aggregates.

7.1.1.4 Wetting of Blocks

Blocks need not be wetted before or during lying in the walls. In case the climate conditions so require, the top and the sides of the blocks may only be slightly moisture so as to prevent absorption of water from the mortar and ensure the development of the required bond with the mortar.

7.1.1.5 Laying

Blocks shall be laid in mortar, as indicated and thoroughly bedded in mortar, spread over the entire top surface of the previous course of blocks to a uniform layer of not less than 10mm and not more than 12mm in thickness.

All courses shall be laid truly horizontal and all vertical joints truly vertical. Blocks shall break joints with those above and below for not less than quarter of their length. Precast half-length closures (and not cut from full size blocks) shall be at right angles to the face unless otherwise directed. Care shall be taken during the construction to see that edges of blocks are not damaged.

SECTION –8
8. FINISHING

8.1 PAINTING WITH SYNTHETIC ENAMEL PAINT

Generally, all works shall be in accordance with section 15.44 of KPWD Specifications 2013-2014 in addition to section 13.44 of CPWD specifications - 1996/2002 with correction slips & amendments upto date.

8.1.1 Materials: Synthetic enamel paint (conforming to IS: 2932) of approved brand and manufacture and of the required colour shall be used as recommended by the manufacturer.

8.1.2 Painting on new surface

Preparation of surface

a) Wood Work: the surface shall be cleaned and all unevenness removed, as specified knots if visible, shall be covered with a preparation of red lead. Holes and indentations on the surface shall be filled in with glazier's putty or wood putty conforming to IS: 419 and rubbed smooth before painting is done. The surface should be thoroughly dry before painting.

b) Iron and steel work: the priming coat shall have dried up completely before painting is started. Rust and scaling shall be carefully removed by scraping or by brushing with steel wire brushes. All dust and dirt shall be carefully and thoroughly wiped away.

c) Plastered surface: The priming coat shall have dried up completely before painting is started. All dust or dirt that has settled on the priming coat shall be thoroughly wiped away before painting is started.

8.1.3 Application: the number of coats including the undercoat shall be as stipulated in the item.

a) **First coat:** one coat of the specified paint shall be applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dusted off.

b) **Top coat:** top coats of synthetic enamel paint of desired shade shall be applied after the first coat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

Other details shall be as specified in KPWD Specification 2013-2014 as far as they are applicable. The primer is to be used as specified by the manufacturer and approved by the engineer.

SECTION-09

9.0 HORTICULTURE AND LANDSCAPING

1.0 HORTICULTURE WORK

Horticultural operations shall be started on ground previously levelled and dressed to required formation levels and slopes. In case where unsuitable soil is met with, it shall be either removed or, replaced or it shall be covered over to a thickness decided by the Engineer-in-charge with good earth. In the course of excavation or trenching during horticultural operations, any walls, foundations, etc. met with shall not be dismantled without pre-measurement and prior to the written permission of the Engineer-in-charge.

1.1 TRENCHING IN ORDINARY SOIL

1.1.0 Trenching is done in order to loosen the soil, turn over the top layer containing weeds etc. and to bring up the lower layer of good earth to form a proper medium for grassing, regrassing, hedging and shrubbery. Trenching shall be done to the depth ordered by the Engineer-in charge. The depth is generally 30 cm for grassing and 60 cm for regrassing in good soil.

1.1.1 The trenched ground shall, after rough dress, be flooded with water by making small kiaries to enable the soil to settle down. Any local depression unevenness etc. shall be made good by dressing and/or filling with good soil.

1.1.2 Weeds or other vegetation which appear on the ground are then uprooted and removed and disposed off and paid.

1.1.3 Trenching

Trenching shall consist of the following operations:

1. The whole plot shall be divided into narrow rectangular strips of about 1.5 m width or as directed by the Engineer-in-Charge.
2. These strips shall be sub-divided lengthwise into about 1 m long sections. Such sections shall be excavated serially and excavated soil deposited in the adjacent section preceding it.
3. In excavating and depositing care shall be taken that the top soil with all previous plant growth including roots, get buried in the bottom layer of trenched area, the dead plants so buried incidentally being formed into humus.
4. The excavated soil shall be straight away dumped into the adjoining sections so that double handling otherwise involved in dumping the excavated stuff outside and in back filling in the trenches with leads is practically eliminated.

1.1.4 Measurements

Length and breadth of the plot shall be taken correct to 0.1 m and depths correct to cm. Cubical contents shall be calculated in cubic meters, correct to two places of decimal. No deduction shall be made nor extra paid for removing stones, brick bats and other foreign matter met with during excavation upto initial lead of 50 m and stacking the same.

1.1.5 Rate

The rate shall include the cost of all labour and material involved in the operations described above, including cost of all precautionary measures to be taken for protections and supporting all services etc.met with during trenching. It does not include the cost of mixing of earth, sludge/manure.

1.2 GOOD EARTH

1.2.1 The earth shall be stacked at site in stacks not less than 50 cm high and of volume not less than 3.0 cum.

1.2.2 Measurements: Length, breadth and height of stacks shall be measured correct to a cm. The volume of the stacks shall be reduced by 20% for voids before payment, unless otherwise described.

1.2.3 Rate: The rate shall include the cost of excavating the earth from areas lying at distance not exceeding one km. from the site, transporting the same at site breaking of clods and stacking at places indicated. The rate shall also include royalty if payable.

OIL CAKE

Neem/Castor: The cake shall be free from grit and any other foreign matter. It should be undecorticated and pulverized. The material shall be packed in old serviceable gunny bags of 50 kgs capacity approximately. The weight of gunny bag shall be deducted @1 kg per bag and payment shall be made for net quantity. The quality of cake should be got approved by the Engineer-in-charge before supply.

Measurements

The arrangement for weighing shall be made at site of work by the department. The gunny bags shall be the property of the government.

Rate: The rate shall include the cost of labour and material involved in all operations described above, including carriage up to site of work with all lead and lifts, weighing etc.

1.3 SUPPLY AND STACKING OF SLUDGE

1.3.1 It shall be transported to the site in lorries with efficient arrangement to prevent spilling enroute. It shall be stacked at site. Each stack shall not be less than 50 cm height and volume not less than 3 cum.

1.3.2 Measurements

Length, breadth and depth of stacks shall be measured correct to a cm. The volume of the stack shall be reduced by 8% for looseness in stacking and to arrive at the net quantity for payment.

1.3.3 Rate

The rate shall include the cost of labour and material involved in all operations described above, including carriage up to one km. The rate shall also include royalty if payable.

1.4 SUPPLY AND STACKING OF MANURE

1.4.1 Farmyard Manure: Same as 1.3.1.

1.4.2 Measurements: Same as 1.3.2.

1.4.3 Rate : Same as 1.3.3.

1.5 ROUGH DRESSING OF THE TRENCHED GROUND

1.5.0 Rough dressing of the area shall include making kiaries for flooding.

1.5.1 The trenched ground shall be levelled and rough dressed and if there are any hollows and depressions resulting from subsidence which cannot be so levelled, these shall be filled properly with earth brought from outside to bring the depressed surface to the level of the adjoining land and to remove discontinuity of slope and then rough dressed again. The supply and spreading of soil in such depressions is payable separately. In rough dressing, the soil at the surface and for 75 mm depth below shall be broken down to particle size not more than 10 mm in any direction.

1.5.2 Measurements

Length, breadth of superficial area shall be measured correct to 0.1 metre. The area shall be calculated in sqm. correct to two places of decimal.

1.5.3 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above.

1.6 UPROOTING WEEDS FROM THE TRENCHED AREAS

1.6.1 After 10 days and within 15 days of flooding the rough dressed trenched ground with water, the weeds appearing on the ground shall be rooted out carefully and the rubbish disposed off as directed by the Engineer-in-charge.

1.6.2 Measurements

Length, breadth of superficial area shall be measured correct to 0.1 meters. Superficial area of the weeded ground shall be measured for purpose of payments.

1.6.3 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above.

1.7 FINE DRESSING OF THE GROUND

1.7.1 Slight unevenness, ups, and downs and shallow depressions resulting from the settlement of the flooded ground, in drying and from the subsequent weeding operations, shall be removed by fine dressing the surface to the formation levels of the adjoining land as directed by the Engineer-in-charge, and by adding suitable quantities of good earth brought from outside, if necessary.

1.7.2 Measurements

Length, breadth and depth of stacks shall be measured correct to a cm. The area shall be calculated in sqm. correct to two places of decimal.

1.7.3 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above.

1.8 SPREADING OF GOOD EARTH

1.8.1 Good earth shall be removed from stacks by head load and spread evenly over the surface to the thickness ordered by the Engineer-in-charge. It shall be spread with a twisting motion to avoid segregation and to ensure that spreading is uniform over the entire area.

1.8.2 Measurements:

The quantity of good earth spread shall be determined by the difference in the volume of good earth in stacks before and after spreading duly reduced for looseness in stacking by 20% of good earth.

1.8.3 Rate:

The rate shall include of all the labour and material involved in all the operations described above, but does not include the cost of the good earth which shall be paid for separately unless specifically described in the item.

1.8.A SPREADING OF SLUDGE/MANURE

1.8.A.1 Good earth shall be thoroughly mixed with sludge or manure in specified proportion as described in the item or as directed by the Engineer-in-Charge. The mixing shall be spread as described in 1.9.1 to the thickness ordered by the Engineer-in-Charge.

1.8.A.2 Measurements

The quantity of good earth and sludge or manure mixed shall be determined by the difference in the volume of good earth and sludge or manure in stack, before and after spreading duly accounted for voids and looseness in stack.

1.8.A.3 Rate

The rate shall include of all the labour and material involved in all the operations described above, but does not include the cost of good earth sludge or manure which shall be paid for separately, unless otherwise described in the item.

1.9 MIXING OF GOOD EARTH AND SLUDGE/MANURE

1.9.1 The stacked earth shall, before mixing be broken down top particle of sizes not exceeding 6 mm in any direction. Good earth shall be thoroughly mixed with sludge or manure in specified proportion as described in the item or as directed by the Engineer-in-charge.

1.9.2 Measurements

The quantity of good earth and sludge or manure mixed shall be determined by the difference in the volume of good earth, sludge or manure in stack, before and after spreading duly accounted for voids and looseness in stack.

1.9.3 Rate

The rate shall include the cost of all labour and materials involved in all the operations described above, but does not include the cost of good earth sludge or manure which shall be paid for separately, unless otherwise described in the item.

1.10 GRASSING WITH SELECTION NO. 1 DOOB GRASS

1.10.0 The area from where the grass roots are to be obtained shall be specified by the Engineer in-Charge at the time of execution of the work and no royalty shall be charged on this account from the contractor. Grass is to be arranged by contractor (cost of grass to be paid separately).

1.10.1 The soil shall be suitably moistened and then the operation of planting grass shall be commenced. The grass shall be dibbled at 10 cm, 7.5 cm, 5 cm apart in any direction or other spacing as described in the item. Dead grass and weeded shall not be planted. The contractor shall be responsible for watering and maintenance of levels and the lawn for 30 days or till the grass forms a thick lawn free from weeded and fit for moving whichever is later. Generally planting in other direction at 15 cm, 10 cm, spacing is done in the case of large open spaces, at 7.5 cm spacing in residential lawn and at 5cm spacing for Tennis Court and sports ground lawn. Rates are including cost of labour and material (grass shall be paid separately.)

1.10.2 During the maintenance period, any irregularities arising in ground levels due to watering or due to trampling by labour, or due to cattle straying thereon, shall be constantly made up to the proper levels with earth as available or brought from outside as necessary, Constant watch shall be maintained to ensure that dead patches are replanted and weeds are removed.

1.10.3 Measurements

Length, breadth of the lawn grassed shall be measured correct to 0.1 meter and the area shall be calculated in sqm. correct to two places of decimal.

1.10.4 Rate

The rate shall include of all the labour and material involved in all the operations described above, excluding supply of the requisite quantity of good earth and grass so needed for properly maintaining the levels of the lawns. (payment of grass to be paid separately).

1.11 RENOVATION OF LAWNS

1.11.1 The area shall be first weeded out of all undesirable growth. The entire grass shall be scrapped (cheeled) without damaging roots and level of the grounds. Slight irregularities in surface shall be levelled off and the area shall then be forked so as to aerate the roots of the grass without, however uprooting them.

Specified quantity of sludge or manure shall than be spread uniformly with wooden straight edge (phatti) as directed by the Engineer-in-charge. The area shall then be slightly sprinkled with water so as to facilitate proper integration of the manure or sludge with the soil and later flooded. The contractor shall be responsible for watering, proper maintenance and tending of the lawn for 30 days or till the grass forms a lawn fit for mowing, whichever is later. During the above operations, all undesirable growths shall be constantly weeded out and all rubbish removed and disposed off as directed by the Engineer-in-Charge.

1.11.2 MEASUREMENTS

Length, breadth of the lawn renovated shall be measured correct to 0.1 meter and the area shall be calculated in sqm. correct to two places of decimal.

1.11.3 Rate

The rate shall include of all the labour and T&P (excluding RH pipe/grass) involved in all the operations described above, excluding the supply of the requisite quantity of good earth if so needed for proper maintenance of the levels of the lawns. The cost of the sludge or manure shall be measured and paid for separately, unless its supply is specifically included in the description of the item.

1.12 UPROOTING RANK VEGETATION AND WEEDS AND PREPARING THE GROUND FOR PLANTING SELECTION NO. 1 DOOB GRASS

1.12.1 Initially the area shall be dug up to a depth of 30 cm. and weeds and rank vegetarian with roots removed thereon by repeated forking. The whole area then shall be retrenched to a depth of 60 cm in the same manner as described in 1.1. Clods of excavated earth shall then be broken upto the size not more than 75 mm in any direction. The area shall then be flooded with water and after 10 days and within 15 days of flooding, weeds shall be uprooted carefully. The rubbish arising from the above operations shall be removed and disposed off in a manner directed by the Engineer-in-charge, away from the site. The earth shall then be rough dressed and fine dressed as described in 1.6 & 1.8.

1.12.2 Measurements

Length, breadth of uprooted area shall be measured correct to 0.1 meter and the area shall be calculated in sqm. correct to two places of decimal.

1.12.3 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above.

1.13 EXCAVATION AND TRENCHING FOR PREPARATION OF BEDS FOR HEDGE AND SHRUBBERY

1.13.1 Beds for hedges and shrubbery are generally prepared to width of 60 cm. to 125 cm. and 2 to 4 meters respectively.

1.13.2 Beds for hedges and shrubbery shall be prepared in the following manner. The beds shall first be excavated to a depth of 60 cm. and the excavated soil shall be stacked on the sides of the beds. The surface of the excavated bed shall then be trenched to a further depth of 30 cm, in order to loosen the soil, in the manner described in 1.1. No flooding will be done at this stage but the top surface shall be rough dressed and levelled. The excavated soil from the top 60 cm depth of the bed stacked at the site shall then be thoroughly mixed with sludge over manner in the proportion 8:1 by ratio or other proportion described in the item. The mixed earth and manure shall be refilled over the trenched bed, levelled neatly and profusely flooded so that the water reaches even the bottom most layers of the trenched depth of the bed. The surface after full subsidence shall again be refilled with the earth and manure mixture, watered and allowed to settle and finally fine dressed to the level of 50 mm to 75 mm below the adjoining ground or as directed by the Engineer-in-Charge. Surplus earth if any, shall be disposed off as directed by the Engineer-in-charge. Any surplus earth if removed beyond initially lead shall be paid separately. Stones, bricks bats and other foreign matter if met with during excavation or trenching shall be removed and stacked within initially lead & lift, such material as is declared unserviceable by the Engineer-in-charge shall be disposed by spreading and levelling at places ordered by him. If disposed outside the initial lead & lift, then the transport for the extra leads will be paid for separately. If a large proportion of material unsuitable for the

hedging and shrubbery operations is met with and earth from outsides is required to be brought in for mixing with manure and filling, the supply and stacking of such earth will be paid for separately.

1.13.3 Measurements

Length, breadth and depth of the pit excavated and trenched shall be measured correct to a cm. The cubical contents shall be calculated in cubic meter correct to two places of decimal.

1.13.4 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above. The rate shall not include the cost of supply & stacking of the manure unless the same is specifically included in the description of the item.

1.14 DIGGING HOLES FOR PLANTING TREES

1.14.1 In ordinary soil, including refilling earth after mixing with oil cake, manure and watering.

1.14.1.1 Holes of circular shape in ordinary soil shall be excavated to the dimensions described in the items and excavate soil broken to clods of size not exceeding 75 mm in any direction, shall be stacked outside the hole, stones, brick bats, unsuitable earth and other rubbish, all roots and other undesirable growth met with during excavation shall be separated out and unserviceable material removed from the size as directed. Useful material, if any, shall be stacked properly and separately. Good earth in quantities as required to replace such discarded stuff shall be brought and stacked at site by the contractor which shall be paid for separately. The tree holes shall be manured with powdered Neam/castor oil cake at the specified rate along with farm yard manure over sludge shall be uniformly mixed with the excavated soil after the manure has been broken down to powder, (size of particle not be exceeded 6 mm in any direction) in the specified proportion, the mixture shall be filled in to the hole up to the level of adjoining ground and then profusely watered and enable the soil to subside the refilled soil shall then be dressed evenly with its surface about 50 to 75 mm below the adjoining ground level or as directed by the Engineer-in-charge.

1.14.1.2 Measurements: Holes shall be enumerated.

1.14.1.3 Rate: The rate shall include the cost of all the labour and material involved in all the operations described above, excluding the cost of supply and stacking the requisite quantity of manure/ sludge and oil cake.

1.14.2 In Soil other than Ordinary Soil

1.14.2.1 Where holes are dug in (a) Hard soil (b) Ordinary rock or (c) Hard rock, the above soils occurring independently over in conjunction with each other and /or ordinary soil in any hole, the different excavated soil shall be stacked separately. Excavation in hard rock shall be carried out by chiseling only.

1.14.2.2 The stack measurement of ordinary rock and hard rock shall be reduced by 50% and of soil by 20% to arrive at the excavated volume. This excavation shall be paid for as extra over the rate for holes dug in ordinary soil above, at rate appropriate to particular soil concerned.

1.14.2.3 Sufficient quantity of good soil to replace the solid volume of stones, brick bats, unsuitable earth and other rubbish, all roots and other undesirable growth, ordinary and hard stacks shall be brought and stacked at site but the supply and stacking of such shall be paid for separately.

1.14.2.4 The useless excavated stuff shall be disposed off by spreading at places as ordered by the Engineer-in-charge. If such places are outside initially leads, carriage for the extra lead shall be paid for separately.

1.14.2.5 The ordinary soil excavated from the hole and the earth brought from outside shall then be mixed with manure screened through sieve of IS designation 16 mm in the proportion specified in the description of the item and filled with the pit and the same watered and finally dressed.

1.14.2.6 Measurements: The pit shall be enumerated. The volume of excavation in soil and other than a ordinary soil shall be determined by reducing the stack volume of the relevant soil with respective percentage for voids specified in 1.14.2.2.

1.14.2.7 Rate: The rate shall include the cost of all the labour and material involved in all the operations described above, including mixing refilling, watering, dressing etc. but shall not include

(a) cost of manure over sludge

(b) cost of supplying and stacking of good earth for replacement and

(c) the cost of carriage beyond initial lead for disposing off useless materials. The excavation other than that of ordinary soil shall be paid extra over and above the rate if excavation in ordinary soil.

1.16 M.S. FLAT IRON TREE GUARD

1.16.1 M.S. Iron Riveted Tree Guard

1.16.1.1 The tree guard shall be 600 mm in diameter and 2 meter high above ground level and 25 cm in below ground level.

1.16.1.2 The tree guard shall be framed of 4 nos. 25 x 6 m M.S. flat 2 meter long excluding displayed outward at lower and upto an extent 10 cm and 8 nos. 25 x 3 mm vertical M.S. Flat Rivetted to 3 Nos. 25 x 6 mm Flat iron rings in two halves, bolted together 8 mm dia and 30 mm long M.S. bolts and nuts. The entire tree guard shall be given two coats of synthetic enamel paint of approved brand and manufacturer of required shade over a priming coat of ready mixed steel primer of approved brand and manufacturer. The design of tree guards shall be shown in the drawing.

1.16.1.3 Measurement: The tree guard shall be enumerated.

1.16.1.4 Rate: The rate shall include the cost of all the labour and material involved in all the operations described above.

1.16.2 M.S. Flat Iron Welded Tree Guard

1.16.2.1 The tree guard shall be 600 mm in diameter and 2 meter high above ground level and 25 cm in below ground level.

1.16.2.2 The tree guard shall be framed of 4 nos. 25 x 6 mm MS. Flat 2 metres long excluding displayed outward at lower and upto an extent 10 cm and 8 Nos. 25 x 3 mm vertical M.S. Flat Riveted to 3 nos. 25 x 6 mm flat iron rings in two halves, bolted together 8 mm dia and 30 mm long M.S. Bolts & nuts. The entire tree guard shall be given two coats of synthetic enamel paint of approved brand and manufacturer of required shade brand and manufacturer of required shade over a priming coat of ready mixed steel primer of approved brand and manufacturer. The design of tree guards shall be shown in the drawing.

1.16.2.3 Measurement: The tree guard shall be enumerated.

1.16.2.4 Rate: The rate shall include the cost of all the labour and material involved in all the operations described above.

1.20 FILLING MIXTURE OF EARTH & SLUDGE OR MANURE

1.20.0 The separately specified earth and sludge shall be broken down to particles of size not exceeding 6 mm in any directions before mixing. Good earth shall be thoroughly mixed with sludge over manure in specified proportions as directed by Officer-in-Charge. During the process of preparing the mixture as above, trenches shall be flooded with water and levelled.

1.20.1 Measurements

Measurement shall be made in (Length, breadth and height of stacks) cubic meter. The cubical contents shall be worked out to the nearest two places of decimal in cubic meter.

1.20.2 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above, but do not include the good earth, sludge or manure which will be paid separately.

1.21 EXCAVATION IN DUMPED STONE OR MALBA

1.21.1 Excavation operations shall include excavation and getting out water if required. During the excavation stone, brick bats and other foreign material if met shall be removed and stacked within 50meter leads and lifts. Such material as is declared unserviceable by the Engineer in-Charge be disposed within 50 m. The excavated surface shall be neatly dressed and levelled.

1.21.2 Measurements

Measurement shall be made in (Length, breadth and height of stacks) cubic meter. The cubical contents shall be worked out to the nearest two places of decimal in cubic meter.

1.21.3 Rate

The rate shall include the cost of all the labour and material involve in all the operations described above.

1.22 EXCAVATION IN BAJRI PATH

1.22.1 All excavated operations shall include excavation and stacking of serviceable and unserviceable material. Excavated surface of Bajri path shall be removed and stacked upto 50 meter lead and disposed material neatly dressed.

1.22.2 Measurements Same as 1.18.2.

1.22.3 Rate Same as 1.18.3.

1.23 EXCAVATION OF WATER BOUND MACADAM

1.23.1 All excavated operations shall include excavation, stacking of serviceable and unserviceable material. Excavation shall be straight and uniform in width. Soling stone and aggregate obtained from excavation of W.B.M. shall be stacked separately and unserviceable material disposed off with lead upto 50 meter and lift upto 1.50 meter and neatly dressed.

1.23.2 Measurements

Measurement shall be made in (Length, breadth and height of stacks) cubic meter. The cubical contents shall be worked out to the nearest two places of decimal in cubic meter.

1.23.3 Rate

The rate shall include the cost of all the labour and material involved in all the operations described above.

1.24 FLOODING THE GROUND WITH WATER AND MAKING KIARIES

1.24.1 The water for flooding shall be of soft water and free from chemical and good for growing the trees and shrubs etc. Before flooding the kiaries shall be made in required size and shape as per directions of Officer-in-charge. After uprooting weeds from the trenched area and uprooting vegetation, kiaries shall be dismantled.

1.24.2 Measurements

Measurement shall be made in sqm. of area.

1.24.3 Rate

The rate shall be for 100 sqm of area and include the cost of all the labour and material involved in all the operations described above.

1.59 CLEANING AND SWEEPING OF LAWN

The Cleaning of Garden shall cover to proper sweeping work including removing litter, debris, picking of leaves, papers, plastic bottles etc. & disposal of collected waste in dustbin/designated place as decided by officer in charge.

1.59.1 Measurements

Measurement shall be made in sqm. of area.

1.59.2 RATE

The rate shall be for per sqm of area and include the cost of all the labour and material involved in all the operations described above.

1.60 REMOVAL OF GARDEN WASTE

Removal of garden waste by TATA 407 or equivalent including loading/unloading and carriage up to 1 km lead, complete disposal at designated place decided by officer in charge.

1.60.1 Measurements

Measurement shall be made per Trip.

1.60.2 RATE

The rate shall be for per Trip basic and include the cost of all the labour and material & TATA 407 or Equivalent involved in all the operations described above.

1.61 PRUNING, TRIMMING, SHAPING OF TREES

Pruning, trimming, shaping of trees/shrubs (ht 15 feet and above) i/c removal of cut materials up to 50mt. lead and as per direction of officer in charge.(i/c necessary T&P shall be arranged by the contractor. Pruning, trimming, shaping of trees/ shrubs shall be done as per direction of officer incharge.

1.61.1 Measurements

Measurement shall be made per tree/shrub in proper manner.

1.61.2 RATE

The rate shall be for per Tree/shrub basic and include the cost of all the labor and materials & equipments involved in all the operations described above.

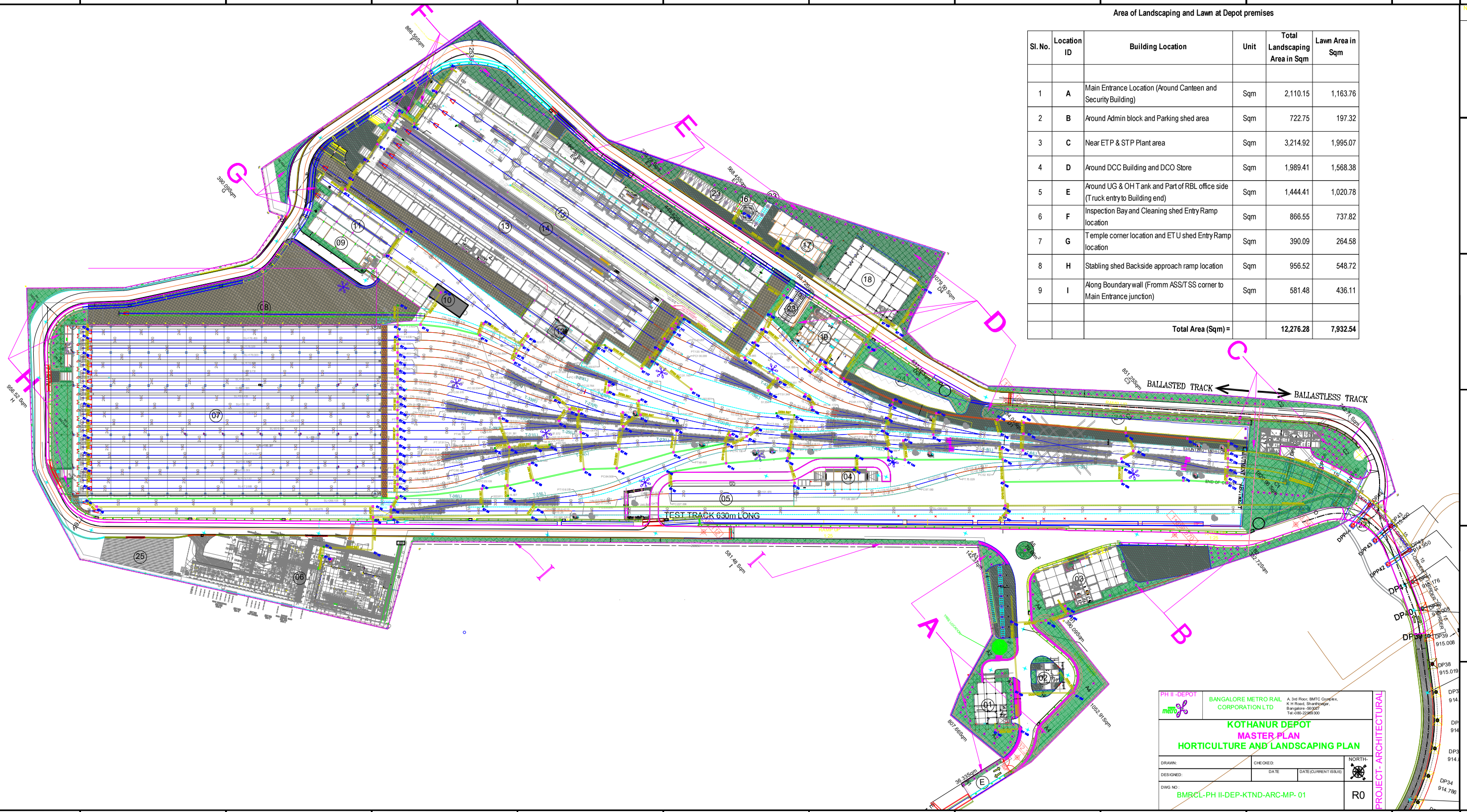
SPECIFICATIONS OF PLANTS

The plants should be as per following specification.

1. The plants should be full of fresh and healthy foliage.
2. The plants should be free from insect, pest and diseases.
3. Plant should be well developed and healthy.
4. The height of the plants will be measured from top of the pots.
5. The plants should be well settled and should not be newly shifted/Transplanted.
6. The plants should be true to the variety and Variety name should be tagged.
7. Moss stick used should be made on plastic pipe.
8. Moss stick should be straight and properly fixed in the pot.
9. The rejected plants materials should be removed from the site immediately.
10. Moss stick should be covered with the plants in case of plants supplied with moss stick.
11. The Plant should be well stablished and should have good foliage.
12. Good earth and manure used for filling the pot/poly bag should be free from any inert material and mixed to proper ratio.
13. Pot/ Poly bag used for filling the plants should be of proper size.
14. There should be proper drainage in pots for plants.
15. The flowering plants should also have proper flowering and should be true to the variety.
16. All plant should have the tendency of growth and should not be stunted or deshaped.
17. There should be no stagnation of water in the pots.
18. Plant should not have any physiological disorder.
19. Tips of the Plants should have intact, there should not be any damages etc.
20. In case of flowering pots flower should be on bud stage/semi bloom stage.
21. In case of potted plant pots should have uniformity/same size and quality.
22. Plants of bigger height should be properly supported/stacked by bamboo stick.
23. Pots/Polybags soil should not be infectious and plant should have free from all kind of diseases.
24. Bulbs, seeds, seedling, suckers should properly treated with fungicides before supply.

Section-J: Tender Drawings

(As enclosed with this tender document)



Area of Landscaping and Lawn at Depot premises

Sl. No.	Location ID	Building Location	Unit	Total Landscaping Area in Sqm	Lawn Area in Sqm
1	A	Main Entrance Location (Around Canteen and Security Building)	Sqm	2,110.15	1,163.76
2	B	Around Admin block and Parking shed area	Sqm	722.75	197.32
3	C	Near ETP & STP Plant area	Sqm	3,214.92	1,995.07
4	D	Around DCC Building and DCO Store	Sqm	1,989.41	1,568.38
5	E	Around UG & OH Tank and Part of RBL office side (Truck entry to Building end)	Sqm	1,444.41	1,020.78
6	F	Inspection Bay and Cleaning shed Entry Ramp location	Sqm	866.55	737.82
7	G	Temple corner location and ETU shed Entry Ramp location	Sqm	390.09	264.58
8	H	Stabling shed Backside approach ramp location	Sqm	956.52	548.72
9	I	Along Boundary wall (Fromm ASS/TSS corner to Main Entrance junction)	Sqm	581.48	436.11
		Total Area (Sqm) =		**12,276.28**	**7,932.54**

PH II -DEPOT

BANGALORE METRO RAIL CORPORATION LTD

A, 3rd Floor, BMTC Complex, K. H Road, Shanthinagar, Bangalore -560027 Tel:-080-22483300

KOTHANUR DEPOT
MASTER PLAN
HORTICULTURE AND LANDSCAPING PLAN

DRAWN:
CHECKED:
DESIGNED:
DATE
DATE (CURRENT ISSUE)
NORTH
DWG NO : BMRCL-PH II-DEP-KTND-ARC-MP- 01
R0

PROJECT- ARCHITECTURAL

Bangalore Metro Rail Corporation Limited

Section K: Safety, Health & Environment (SHE) Manual

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PART – I: SAFETY MANAGEMENT

1.0 General

1.1 Scope

1.1.1 This document defines the principal requirements of the Employer on Safety, Health and Environment associated with the contractor / sub-contractor and any other agency to be practiced at construction worksites at all time.

1.2 Definition / Languages

1.2.1 The Environmental Quality Management Manual (EQM) forms an essential part of the overall Environmental protection system employed by BMRCL for the construction of Bangalore Metro project.

1.3 DEFINITIONS & ABBREVIATIONS

a) Environment- The total surroundings of an organism including water, air and land and other living creatures.

b) Environmental Pollutant means any solid, liquid or gaseous substance present in such concentration as may be or tend to be injurious to environment.

c) Environmental Pollution means the presence in the environment of any environmental pollutant.

d) Nuisance is annoyance, which results from any construction activity that affects the material comfort and quality of life of the inhabitants of the area surrounding the construction site.

e) Monitoring is the use of direct or indirect reading field instrumentation to provide information regarding the levels of pollutants released during construction.

f) Construction Site is the contract limits for construction. It shall be all the area within the limits of the work as shown on the Plans. Construction site shall also include staging, and debris disposal areas and transportation routes to and from these areas.

g) Noise is any unwanted sound disturbance of the environment around the area of construction operations.

h) Decibel is a measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power) with respect to a standardized reference quantity.

i) A - weighted Noise levels in Decibels (referenced to 20 micro- Pascal) as measured with A-weighting network of standard sound level meter, abbreviated dB (A).

j) Energy Equivalent Level (L_{eq}) is the level of a steady noise which has the same energy as the fluctuating noise level integrated over the period of measurement. L_{max} is the maximum Noise Level during the period of measurement. L_{10} and L_{90} is the percentile exceeding levels of sound which is exceeded 10% and 90% of the time of measurement.

k) Waste is unwanted surplus substances arising from the application of all construction operations and any substance or article which is required to be disposed.

l) Suspended Particulate Matter is abbreviated as SPM and measured in µg/m3.

m) Environmental Quality Management Manual is abbreviated as EQM.

n) Air Monitoring and Control Plan is abbreviated as AMCP.

o) Noise Monitoring and Control Plan is abbreviated as NMCP.

q) Ministry of Environment and Forests, Government of India is abbreviated as MOEF.

r) Central Pollution Control Board, New Delhi is abbreviated as CPCB.

2.0 Workman Compensation Act, 1923 along with allied Rules

2.1 The contractor shall ensure that all his employees / workmen are covered under 'Workmen Compensation Act' and shall pay compensation to his workmen as and when the eventuality for the same arises.

2.2 Notwithstanding the above Act/Rules, there is nothing in those to exempt the contractor from the purview of any other Act or Rule in Republic of India for the safety of men and materials.

2.3 If the requirements stated in this document are less stringent than or in conflict with the country's applicable legislation, the latter shall apply.

3.0 All personnel shall be issued a photo identity card of size 85mm x 55mm duly signed by the authorized representative of the contractor before they are engaged for any work as per the format given in Appendix No.2.

4.0 Daily Reporting of total number of workmen

4.1 The contractor shall report to the Employer the total number of workmen engaged by all including any subcontractor within 2 hours of starting of any shift in any day and reporting shall be through tele-fax / email. The onus of checking the receipt of the same by the Employer lies with the contractor. If the information is not received or received more than 2 hrs after starting of the shift, penalty shall be levied as per relevant clause.

5.0 Accident reporting and investigation

5.1 Reporting to Employer

5.1.1 All accidents and dangerous occurrences shall immediately be informed verbally to the Employer. This will enable the Employer to reach to the scene of accident / dangerous occurrences to monitor/assist any rescue work and/or start conducting the investigation process so that the evidences are not lost.

5.1.2 Reports of all accidents (fatal/injury) and dangerous occurrences shall also be sent within 24 hours as per format provided in the Employer's Project Safety manual.

5.1.3 No accident / dangerous occurrences are exempted from reporting to the Employer.

5.1.4 Any wilful delay in verbal and written reporting to the Employer shall be penalised as per relevant clause.

5.2 Reporting to Govt. Organisations

5.2.1 In addition to the above verbal and written reporting to the Employer, as per Rule 210 of BOCWR, notice of any accident to a worker at the building or construction site that:

a) causes loss of life; or
b) disables a worker from working for a period of 48 hours or more immediately following the accident;
c) shall forthwith be sent by telegram, telephone, fax, or similar other means including special messenger within four hours in case of fatal accidents and 72 hours in case of other accidents, to:
    i) the Regional Labour Commissioner, wherein the contractor has registered the firm/work
    ii) the board with which the worker involved was registered as a beneficiary;
    iii) Director General and
    iv) the next of kin or other relative of the worker involved in the accident;

5.2.2 Further, notice of accident shall be sent in respect of an accident which

a) causes loss of life; or
b) disables the injured worker from work for more than 10 days to
    i) the officer-in-charge of the nearest police station;
    ii) the District Magistrate or, if the District Magistrate by order so desires, to
    iii) the Sub-Divisional Magistrate

5.2.3 In case of an accident causing minor injury, first-aid shall be administered and the injured worker shall be immediately transferred to a hospital or other place for medical treatment.

5.2.4 Where any accident causing disablement that subsequently results in death, notice in writing of such death, shall be sent to the authorities mentioned in clause ***5.2.1*** and ***5.2.2*** above within 72 hours of such death.

5.2.5 Reporting of dangerous occurrences:

5.2.5.1 The following classes of dangerous occurrences shall be reported to the Inspector having jurisdiction, whether or not any disablement or death caused to the worker, namely:

a) falling of objects from height;
b) explosion of receiver or vessel used for storage of pressure greater than atmospheric pressure, of any gas or gases or any liquid or solid used as building material;
c) fire and explosion causing damage to any place on construction site where building workers are employed;
d) spillage or leakage of any hazardous substance and damage to their container;
e) collapse, capsizing, toppling or collision of transport equipment;
f) leakage or release of harmful toxic gases at the construction site;

5.3 Accident investigation

5.3.1 General

5.3.1.1 Investigations should be conducted in an open and positive atmosphere that encourages the witnesses to talk freely. The primary objective is to ascertain the facts with a view to prevent future and possibly more serious occurrences

5.3.1.2 Accidents and Dangerous Occurrences which result in death, serious injury or serious damage must be investigated by the Contractor immediately to find out the cause of the accident/occurrence so that measures can be formulated to prevent any recurrence.

5.4 Employers' independent incident investigation

5.4.1 In case of fatal / dangerous occurrence the Employer shall also conduct independent investigation. Contractor and his staff shall extend necessary co-operation and testify about the accident.

5.4.2 The contractor shall take every effort to preserve the scene of accident till the Employer completes the investigation.

5.4.3 All persons summoned by the Employer in connection to witness recording shall obey the instructions without delay. Any wilful suppression of information by any person shall be removed from the site immediately and / or punishable as per relevant penalty clause.

5.5 All persons summoned by the Employer in connection to witness recording shall obey the instructions without delay. Any wilful suppression of information by any person shall be removed from the site immediately and / or punishable as per relevant penalty clause.

PART – II: SAFETY

6.0 Requirements for guardrails, toe-boards, barriers and similar collective means of protection

i) Unless the context otherwise requires, any reference in this section to means of protection is to a guardrail, toe-board, barrier or similar collective means of protection.
ii) Means of protection shall
   a) be of sufficient dimensions, of sufficient strength and rigidity for the purposes for which they are being used, and otherwise suitable;
   b) be so placed, secured and used as to ensure, so far as is reasonably practicable, that they do not become accidentally displaced; and
   c) be so placed as to prevent, so far as is practicable, the fall of any person, or of any material or object, from any place of work.

7.0 Slipping, Tripping, Cutting, Drowning and Falling Hazards

i) All places should be free from dust, debris or similar materials.
ii) Sharp projections or any protruding nails or similar objects shall be suitably guarded or shall even be avoided to make the place safe to work.
iii) Contractor shall not allow workmen to work or use platforms, scaffolds/passageways or any walkways, which has water, or oil or similar substances spilt and has a slipping hazard, unless it is cleaned off or covered or sanded or saw dusted or make it safe with any suitable material.
iv) When workers are exposed to areas where fall into water is possible, the contractor shall provide suitable and adequate equipment for saving the workers from drowning and rescuing from such hazard. If the Employer considers, the contractor shall provide well-equipped boat or launch, manned with trained personnel at the work place.
v) Open side or opening where worker, equipment, vehicle or lifting appliance may fall at a building or outside shall be guarded suitably except in places of free access by reasons of nature of work.
vi) Suitable safety net shall be provided at places of material / man falling is possible in accordance with national standards.

8.0 Lifting Appliances and Gear

8.1 Lifting appliances means a crane, hoist machinery, derrick, winch, gin pole, sheer legs, jack, hoist drum, slewing machinery, slewing bearing fasteners, loffing machinery sheaves, pulley blocks, hooks or other equipment used for lifting materials, objects or building workers and lifting gears means ropes, chain slings, shackles, hooks, lifting lugs, wire ropes, lifting eyebolts and eyenuts and other accessories of a lifting appliance.

9.0 Site Electricity

9.1 Competency of Electrical personnel:

9.1.1 The contractor shall employ qualified and competent electrical personnel

9.2 Assessment of power

9.2.1 The contractor shall assess the size and location of the electrical loads and the manner in which they vary with time during the currency of the contract.

9.2.2 The contractor shall elaborate as to how the total supply is to be obtained / generated. The details of the source of electricity, earthing requirement, substation / panel boards, distribution system shall be prepared and necessary approval from Employer obtained before proceeding of the execution of the job.

9.2.3 The main contractor shall take consideration, the requirements of the sub / petty contractors' electric power supply and arrive at the capacity of main source of power supply from diesel generators.

9.2.4 As the sub / petty contractors' small capacity generators create more noise and safety hazard, no small capacity diesel generators shall be allowed for whatsoever the type of job to be executed under this contract.

9.2.5 If any unsafe noise making small capacity diesel generators are found used by sub / petty contractors the main contractor shall only be penalised.

9.3 Work on site

9.3.1 The contractor shall also submit electrical single line diagram, schematic diagram and the details of the equipment for all temporary electrical installation and these diagrams together with the temporary electrical equipment shall be submitted to the Employer's for necessary approval. Failure to do so shall invite penalty as per relevant clause.

9.4 Strength and capability of electrical equipment

9.4.1 No electrical equipment shall be put into use where its strength and capability may be exceeded in such a way as may give rise to danger.

9.5 Adverse or hazardous environments

9.5.1 Electrical equipment, which may reasonably foreseeably be exposed to-

(a) mechanical damage;
(b) the effects of the weather, natural hazards, temperature or pressure;
(c) the effects of wet, dirty, dusty or corrosive conditions; or
(d) any flammable or explosive substance, including dusts, vapours or gases, shall be of such construction or as necessary protected as to prevent, so far as is reasonably practicable, danger arising from such exposure.

9.6 Distribution system:

9.6.1 The contractor shall provide distribution system for control and distribution of electricity from a main AC supply of 50Hz for typical appliances,

i) Fixed plant – 400V 3 phase
ii) Movable plant fed via trailing cable over 3.75 kW – 400 3 phase
iii) Installation in site buildings – 230V single phase
iv) Fixed flood lighting – 230V single phase
v) Portable and hand tools – 115V single phase
vi) Site lighting - 115V single phase
vii) Portable hand lamps – 115V single phase

9.7 Electrical protection circuits

9.7.1 Precautions shall be taken, either by earthing or by other suitable means, to prevent danger arising when any conductor (other than a circuit conductor) which may reasonably foreseeable become charged as a result of either the use of a system, or a fault in a system, becomes so charged. A conductor shall be regarded as earthed when conductors of sufficient strength and current-carrying capability to discharge electrical energy to earth connect it to the general mass of earth.

If a circuit conductor is connected to earth or to any other reference point, nothing which might reasonably be expected to give rise to danger by breaking the electrical continuity or introducing high impedance shall be placed in that conductor unless suitable precautions are taken to prevent that danger.

9.7.2 Appropriate electrical protection shall be provided for all circuits, against over load, short circuit and earth fault current.

9.7.3 The contractor shall provide sufficient ELCBs (maintain sensitivity 30 mA) / RCCBs for all the equipments (including Potable equipments), electrical switchboards, distribution panels etc. to prevent electrical shocks to the workers.

9.7.4 All protection devices shall be capable of interrupting the circuit without damage to any equipments and circuits in case of any fault may occur.

9.7.5 Rating of fuses and circuit breakers used for the protection of circuits should be coordinate with equipment power ratings.

9.7.6 Protection against lightning shall be ensured to all equipment kept in open at sites.

9.8 Cables:

9.8.1 Cables shall be selected after full consideration of the condition to which they shall be exposed and the duties for which they are required. Supply cable up to 3.3 kV shall be in accordance with BS 6346.

9.8.2 For supplies to mobile or transportable equipment where operating of the equipment subjects the cable to flexing, the cable shall conform to any of these codes BS 6007 / BS 6500 / BS 7375.

9.8.3 Flexible cords with a conductor cross sectional area smaller than 1.5 mm^2 shall not be used and insulated flexible cable shall conform to BS 6500 and BS 7375.

9.8.4 Where low voltage cables are to be used, reference shall be made to BS 7375. The following standards shall also be referred to particularly for underground cables BS 6346 and BS 6708

9.8.5 Cables buried directly in the ground shall be of a type incorporating armour or metal sheath or both. Such cables shall be marked by cable covers or a suitable marking tape and be buried at a sufficient depth to avoid their being damaged by any disturbance of the ground. Cable routes shall be marked on the plans kept in the site electrical register.

9.8.6 Cabling passing under the walk way and across way for transport and mobile equipment shall be laid in ducts at a minimum depth of 0.6 meters.

9.8.7 Cables that need to cross open areas, or where span of 3m or more are involved, a catenary wire on poles or other supports shall be provided for convenient means of suspension. Minimum height shall be 6 m above ground.

9.8.8 Cables carrying a voltage to earth in excess of 65V other than supply for welding process shall have metal armour or sheath, which has been effectively earthed and monitored by the contractor. In case of flexible and trailing cables such earthed metal sheath and/or armour should be in addition to the earth core in the cable and shall not be used as the protective conductor.

9.8.9 Armoured cables having an over-sheath of polyvinyl chloride (PVC) or an oil resisting and flame retardant compound shall be used whenever there is a risk of mechanical damage occurring

9.9 **Plugs, socket-outlets and couplers:**

9.9.1 The contractor shall ensure plugs, socket-outlets, and couplers available in the construction site as “splash proof” type. The minimum degree of Ingress Protection should be of IP44 in accordance with BS EN 60529.

9.9.2 Only plugs and fittings of the weatherproof type shall be used and they should be colour coded in accordance with the Internationally recognised standards for example as detailed as follows:

(a) 110 volts: Yellow.

(b) 240 volts: Blue.

(c) 415 volts: Red.

9.10 **Connections**

9.10.1 Every joint and connection in a system shall be mechanically and electrically suitable for use to prevent danger. Proper cable connectors as per national/international standards shall only be used to connect cables.

9.10.2 No loose connections or tapped joints shall be allowed anywhere in the work site, office area, stores and other areas. Penalty as per relevant clause shall be put in case of observation of any tapped joints.

9.11 Portable and hand-held equipments:

9.11.1 The contractor shall ensure the use of double insulated or all-insulated portable electrical hand equipment may be used without earthing (i.e. two core cables), but they shall still be used only on 110V because of the risk of damage to trailing leads.

9.12 Other equipment:

9.12.1 All equipment shall have the provision for major switch/cut-off switch in the equipment itself.

9.12.2 All non-current carrying metal parts of electrical equipment shall be earthed through insulated cable

9.12.3 Isolate exposed high-voltage (over 415 Volts) equipment, such as transformer banks, open switches, and similar equipment with exposed energized parts and prevent unauthorised access.

9.12.4 Approved perimeter markings shall be used to isolate restricted areas from designated work areas and entryways and shall be erected before work begins and maintained for entire duration of work. Approved perimeter marking shall be installed with either red barrier tape printed with the words "DANGER—HIGH VOLTAGE" or a barrier of yellow or orange synthetic rope, approximately 1 to 1.5 meter above the floor or work surface.

9.13 Work on or near live conductors

9.13.1 No person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless-

a) it is unreasonable in all the circumstances for it to be dead; and
b) it is reasonable in all the circumstances for him to be at work on or near it while it is live; and
c) suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.

9.14 Inspection and Maintenance

9.14.1 All electrical equipment should be permanently numbered and a record kept of the date of issue, date of last inspection and recommended inspection period.

9.14.2 Fixed installations shall be inspected at least at three monthly intervals; routine maintenance being carried out in accordance with equipment manufactures recommendations.

10.0 Lighting:

10.1 The contractor shall provide sufficient site lighting, of the right type and at the right place for it to be properly effective. Lighting ought not to introduce the risk of electric shock. Therefore, 230V supplies should be used for those fittings, which are robustly installed, and well out of reach e.g. flood lighting or high-pressure discharge lamps.

10.2 The contractor shall ensure that luminaries should always be placed so that no person is required to work in their own shadow and so that the local light for one person is not a source of glare for the others. Strongly made clamps should be available for attaching luminaries to poles and other convenient supports.

10.3 Luminaries should be robust, resistant to corrosion and rain proof especially at the point of the cable entry.

10.4 The correct type of lamp for each luminaries should always be used and when lamps need to be replaced if shall be in accordance with the supply voltage.

10.5 Lamp holders not fitted with a lamp should be capped off.

10.6 The contractor shall take every effort to illuminate the work site as per the Employer’s requirement.

11.0 Hand Tools and Power Tools

11.1 General

11.1.1 The contractor is wholly responsible for the safe condition of tools and equipment used by his employees and that of his sub-contractors.

11.1.2 Use of short / damaged hand tools shall be avoided and the contractor shall ensure all his hand tools used at his worksite are safe to work with or stored and shall also train his employees (including his sub-contractors) for proper use thereby.

11.1.3 All hand tools and power tools shall be duly inspected before use for safe operation.

11.1.4 All hand tools and power tools shall have sufficient grip and the design specification on par with national/international standards on anthropometrics.

11.2 Hand tools

11.2.1 Hand tools shall include saws, chisels, axes and hatches, hammers, hand planes, screw drivers, crow bars, nail pullers.

11.2.2 The contractor shall ensure that,

i) For crosscutting of hardwood, saws with larger teeth points (no. of points per inch) shall be preferred to avoid the saw jumping out of the job.
ii) Mushroom headed chisels shall not be used in the worksite where the fragments of the head may cause injury.
iii) Unless hatchet has a striking face, it shall be used as a hammer.
iv) Only knives of retractable blades shall be used in the worksite.
v) No screwdrivers shall be used for scraping, chiselling or punching holes.
vi) A pilot hole shall always be driven before driving a screw.
vii) Wherever necessary, usage of proper PPEs shall be used by his employees.

11.3 Power tools

11.3.1 Power tools include drills, planes, routers, saws, jackhammers, grinders, sprayers, chipping hammers, air nozzles and drills.

11.3.2 The contractor shall ensure that

i) Electric tools are properly grounded or / and double insulated.
ii) GFCIs/ RCCBs shall be used with all portable electric tool operated especially outdoors or in wet condition.
iii) Before making any adjustments or changing attachments, his workers shall disconnect the tool from the power source.
iv) When operating in confined spaces or for prolonged periods, hearing protection shall be required.
v) Tool is held firmly and the material is properly secured before turning on the tool.
vi) All drills shall have suitable attachments respective of the operations and powerful for ease of operation.

vii) When any work / operation need to be performed repeatedly or continuously, tools specifically designed for that work shall be used. The same is applicable to detachable tool bit also.
viii) Size of the drill shall be determined by the maximum opening of the chuck n case of drill bit.
ix) Attachments such as speed reducing screwdrivers and buffers shall be provided to prevent fatigue and undue muscle strain to his workers.
x) Stock should be clamped or otherwise secured firmly to prevent it from moving.
xi) Workers shall never stand on the top of the ladder to drill holes in walls / ceilings, which can be hazardous, instead standing on the fourth or fifth rung shall be recommended.
xii) Electric plane shall not be operated with loose clothing or long scarf or open jacket.
xiii) Safety guards used on right angle head or vertical portable grinders must cover a minimum of 180^0 of the wheel and the spindle / wheel specifications shall be checked.
xiv) All power tools / hand tools shall have guards at their nip points.
xv) Low profile safety chain shall be used in case of wood working machines and the saw shall run at high rpm when cutting and also correct chain tension shall be ensured to avoid “kickback”.
xvi) Leather aprons and gloves shall be used as an additional personal protection auxiliary to withstand kickback.
xvii) Push sticks shall be provided and properly used to hold the job down on the table while the heel moves the stock forward and thus preventing kickbacks.
xviii) Air pressure is set at a suitable level for air actuated tool or equipment being used. Before changing or adjusting pneumatic tools, air pressure shall be turned off.

12.0 Welding and Cutting

12.1 Gas cylinders in use shall be kept upright on a custom-built stand or trolley fitted with a bracket to accommodate the hoses and equipment or otherwise secured. The metal cap shall be kept in place to protect the valve when the cylinder is not connected for use.

12.2 Hose clamp or clip shall be used to connect hoses firmly in both sides of cylinders and torches.

12.3 All gas cylinders shall be fixed with pressure regulator and dial gauges

12.4 Non-return valve and Flashback arrester shall be fixed at both end of cylinder and torch.

12.5 Domestic LPG cylinders shall not be used for Gas welding and Cutting purpose.

12.6 DCP or CO_2 type Fire Extinguisher not less than 5 kg shall be fixed at or near to welding process zone in an easily accessible location. Fire Extinguisher should confirm to IS 2190: 1992.

12.7 Use firewatchers if there is a possibility of ignition unobserved by the operator (e.g. on the other side of bulkheads).

12.8 Oxygen cylinders and flammable gas cylinders shall be stored separately, at least 6.6 meters (20 feet) apart or separated by a fire proof, 1.5 meters (5 feet) high partition. Flammable substances shall not be stored within 15 meters of cylinder storage areas.

12.9 Transformer used for electrical arc welding shall be fixed with Ammeter and Voltmeter and also fixed with separate main power switch.

12.10 Welding grounds and returns should be securely attached to the work by cable lugs, by clamps in the case of stranded conductors, or by bolts for strip conductors. The ground cable will not be attached to equipment or existing installations or apparatus.

12.11 Use a low voltage open circuit relay device if welding with alternating current in constricted or damp places.

12.12 Take precautions against the risk of increased fume hazards when welding with chrome containing fluxed consumables or high current metal inert gas (MIG) or tungsten inert gas (TIG) processes.

12.13 Avoid being in contact with water or wet floors when welding. Use duckboards or rubber protection.

12.14 All electrical installations shall meet the IS: 5571: 1997 and NFPA 70 for gas cylinder storage area and other hazardous areas.

12.15 The current for Electric arc welding shall not exceed 300 A on a hand welding operation.

13.0 Fire prevention, protection and fighting system

13.1 The contractor shall ensure that construction site is provided with fire extinguishing equipment sufficient to extinguish any probable fire at construction site. An adequate water supply is provided at ample pressure as per national standard.

13.2 Recharging of fire extinguishers and their proper maintenance should be ensured and as a minimum should meet Indian National Standards

13.3 All drivers of vehicles, foreman, supervisors and managers shall be trained on operating the fire extinguishers and fire fighting equipment.

13.4 Every fire, including those extinguished by contractor personnel, shall be reported to the Employer representatives.

14.0 Corrosive substances

14.1 Corrosive substances including alkalis and acids shall be stored and used by a person dealing with such substances at construction site in a manner that it does not endanger the building worker and suitable PPE shall be provided by the contractor to the worker during such handling and work. In case of spillage of such substances on building worker, the contractor shall take immediate remedial measures.

15.0 Traffic Management

15.1 The basic objective of the following guidelines is to lay down procedures to be adopted by contractor to ensure the safe and efficient movement of traffic and also to ensure the safety of workmen at construction sites.

15.2 All construction workers should be provided with high visibility jackets with reflective tapes as most of the works or either above or under right-of-way. The conspicuity of workmen at all times shall be increased so as to protect from speeding vehicular traffic.

15.3 The guiding principles to be adopted for safety in construction zone are to

i) Warn the road user clearly and sufficiently in advance.
ii) Provide safe and clearly marked lanes for guiding road users.
iii) Provide safe and clearly marked buffer and work zones
iv) Provide adequate measures that control driver behaviour through construction zones.

15.4 Legal permission

15.4.1 In all cases, the contractor shall employ proper precautions. Wherever operations undertaken are likely to interfere with public traffic, specific traffic management plans shall be drawn up and implemented by the contractor in consultation with the approval of local police authorities and/or the concerned metropolitan/civil authorities as the case may be.

15.5 The primary traffic control devices used in work zones shall include signs, delineators, barricades, cones, pylons, pavement markings and flashing lights.

15.6 The road construction and maintenance signs which fall into the same three major categories as do other traffic signs, that are Regulatory Signs, Warning Signs and Direction (or guidelines) Signs shall only be used. The IRC: 67 (Code of Practice for Road Signs) provide a list of traffic signs. The size, colours and placement of sign shall confirm to IRC: 67.

15.7 Warning signs

15.7.1 Warning signs in the traffic control zone shall be utilised to warn the drivers of specific hazards that may be encountered.

15.7.2 The contractor shall place detour signage at strategic locations and install appropriate warning signs. In order to minimize disruption of access to residences and business, the contractor shall maintain at least one entrance to a property where multiple entrances exist.

15.7.3 A warning sign shall be installed at all secondary road which merges with the primary road where the construction work is in progress at sufficient distance before it merges with the primary road so as to alert the road users regarding the ‘Work in Progress’.

15.8 **Barricades**

15.8.1 Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the working area from the risk of accidents due to speedy vehicular movement. Same the way barricades protect the road users from the danger due to construction equipment and other temporary structures.

15.8.2 The structure dimension of the barricade, material and composition, its colour scheme, BMRC logo and other details shall be in accordance with specifications laid down in tender document.

15.8.3 All barricades shall be erected as per the design requirements of the Employer and maintained in good condition and also Erection in-charge maintains a barricade register in site.

15.8.4 All barricades shall be conspicuously seen in the dark/night time by the road users so that no vehicle hits the barricade. Conspicuity. shall be ensured by affixing retro reflective stripes of required size and shape at appropriate angle at the bottom and middle portion of the barricade.

15.8.5 The contractor shall not undertake loading and unloading at carriageways obstructing the free flow of vehicular traffic and encroachment of existing roads by the contractor applying the excuse of work execution.

15.8.6 The contractor shall make arrangements keeping tow away van / manpower to tow away any breakdown vehicle in the traffic flow without losing any time at his cost.

16.0 Personal Protective Equipment (PPEs)

16.1 The contractor shall provide required PPEs to workmen to protect against safety and / or health hazards. Primarily PPEs are required for the following protection

i) Head Protection (Safety helmets)
ii) Foot Protection (Safety footwear, Gumboot, etc)
iii) Body Protection (High visibility clothing (waistcoat/jacket), Apron, etc)
iv) Personal fall protection (Full body harness, Rope-grap fall arrester, etc)
v) Eye Protection (Goggles, Welders glasses, etc)
vi) Hand Protection (Gloves, Finger coats, etc)
vii) Respiratory Protection. (Nose mask, SCBAs, etc)
viii) Hearing Protection (Ear plugs, Ear muffs, etc)

16.2 All construction workers should be provided with high visibility jackets with reflective tapes confirming to the requirement specified under BS EN 471: 1994 as most of the works are executed either above or under right-of-way. The conspicuity of workmen at all times shall be increased so as to protect them from speeding vehicular traffic.

16.3 The contractor shall provide **safety helmet, safety shoe and high visibility clothing** for all employees including workmen, traffic marshal and other employees who are engaged for any work under this contract as per the site requirement.

PART – III: OCCUPATIONAL HEALTH AND WELFARE

17.0 Physical fitness of workmen

17.1 The contractor shall ensure that his employees/workmen subject themselves to such medical examination as required under the law or under the contract provision and keep a record of the same.

17.2 The contractor shall not permit any employee/workmen to enter the work area under the influence of alcohol or any drugs.

17.3 First-aid boxes

17.3.1 The contractor shall ensure at a construction site one First-aid box for workers provided and maintained for providing First-aid to the building workers. Every First-aid box is distinctly marked “First-aid” and is equipped with the complete articles.

17.4 Alcohol and drugs

17.4.1 The contractor shall ensure at all times that no employee is working under the influence of alcohol / drugs which are punishable under Govt. regulations.

17.4.2 Smoking at public worksites by any employee is also prohibited as per Govt. regulations.

18.0 Noise

18.1 The Contractor shall consider noise as an environmental constraint in his design, planning and execution of the Works and provide demonstrable evidence of the same on Employer’s request. The Contractor shall, at his own expense, take all appropriate measures to ensure that work carried out by the Contractor and by his sub-Contractors, whether on or off the Site, will not cause any unnecessary or excessive noise which may disturb the occupants of any nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise.

18.1.1 Without prejudice to the generality of the foregoing, noise level reduction measures shall include the following:

i) The Contractor shall ensure that all powered mechanical equipment used in the Works shall be effectively sound reduced using the most modern techniques available including but not limited to silencers and mufflers.
ii) The Contractor shall construct acoustic screens or enclosures around any parts of the Works from which excessive noise may be generated.

18.1.2 The Contractor shall ensure that noise generated by work carried out by the Contractor and his sub-Contractors during daytime and night time shall not exceed the maximum permissible noise limits, whether continuously or intermittently, as given in the project Safety Manual. The same may be varied from time to time by and at the sole discretion of the Employer, In the event of a breach of this requirement, the Contractor shall immediately re-deploy or adjust the relevant equipment or take other appropriate measures to reduce the noise levels and thereafter maintain them at levels which do not exceed the said limits. Such measures may include without limitation the temporary or permanent cessation of use of certain items of equipment.

18.1.3 The noise monitoring requirements including monitoring locations are given in the project SAFETY Manual.

19.0 **Drinking water**

19.1 The contractor shall make in every worksite, effective arrangements to provide sufficient supply of wholesome drinking water with minimum quantity of 5 litres per workman per day. Quality of the drinking water shall conform to the requirements of national standards on Public Health.

19. 2 While locating these drinking water facility due care shall be taken so that these are easily accessible within a distance of 200m from the place of work for all workers at all location of work sites.

19. 3 All such points shall be legible marked “Drinking Water” in a language understood by a majority of the workmen employed in such place and such point shall be situated within six metres of any washing places, urinals or latrines.

20.0 Landscape and Greenery

20.1 As far as is reasonably practicable, the Contractor shall maintain ecological balance by preventing deforestation and defacing of natural landscape. In respect of ecological balance, the Contractor shall observe the following instructions.

20.2 The Contractor shall, so conduct his construction operations, as to prevent any avoidable destruction, scarring or defacing of natural surroundings in the vicinity of work.

20.3 Where destruction, scarring, damage or defacing may occur as a result of operations relating to Permanent or Temporary works, the same shall be repaired, replanted or otherwise corrected at Contractor’s expense. All work areas shall be smoothened and graded in a manner to conform to natural appearance of the landscape as directed by the Employer.

20.4 A suggested list of trees / shrubs suitable for planting and landscaping is found in Employer’s Project SAFETY Manual.

21.0 Energy Management

21.1 The contractor shall use and maintain equipment so as to conserve energy and shall be able to produce demonstrable evidence of the same upon Employer’s request.

21.2 Measures to conserve energy include but not limited to the following:

i) Use of energy efficient motors and pumps
ii) Use of energy efficient lighting, which uses energy efficient luminaries
iii) Adequate and uniform illumination level at construction sites suitable for the task
iv) Proper size and length of cables and wires to match the rating of equipment
v) Use of energy efficient air conditioners

21.3 The contractor shall design site offices maximum daylight and minimum heat gain. The rooms shall be well insulated to enhance the efficiency of air conditioners and the use of solar films on windows may be used where feasible.

PART - IV: PENALTY AND AWARDS

22.0 Charges to be recovered from contractor for unsafe act or condition

22.1 BMRCL has built an image of safety conscious organisation meticulously over a period of Fourteen years. Any reportable accident (fatality / injury) results in loss of life and/or property damage. These accidents not only result in loss of life but also damage the reputation of BMRC. Most of the accidents are avoidable and caused preliminary due to contractors' negligence. Hence BMRCL shall recover the cost of damages from the contractors for every reportable incident (fatality / injury).

22.2 In addition every BMRCL work site is exposed to public scrutiny as the work is executed just on the right-of-way. Any unsafe act / unsafe condition observed by public further damages our reputation. Because of the non-voluntary compliance of contractors to the condition of contract on SAFETY and project SAFETY manual, BMRC has been forced to establish safety-enforcing organisation. The cost of established such organisation is to be recovered from contractors for all observed safety violations at sites.

22.3 The following table indicates the Safety, Health and Environment violation (unsafe act / unsafe condition) and charges to be recovered from contractors.

SL. NO	TOPIC	UNSAFE ACT/ UNSAFE CONDITION	DEDUCTIBLE AMOUNT
1.	ID card	Non-adherence of clause 4.0	Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations
2.	Injury and Incidence reporting	Fatal accidents Injury accident Abnormal delay in reporting accidents or wilful suppression of information about any accidents / dangerous occurrence as per clause 5.1.4 Non-compliance of the clause 5.3	i. Rs.5,00,000 for first fatality and Rs.10,00,000 for every subsequent fatality. ii. Rs.1,00,000 for first grievously injured person and Rs.2,00,000 for every subsequent grievously injured person (Grievous Injury as defined by Workmen Compensation Act) iii. Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations For items iv) and v) Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations
3.	Site Electrical safety	Non-compliance of clause 9.1.1 Non-compliance of clause 9.2.3, 9.2.4 & 9.2.5 Non-compliance of clause 9.3.1 Non-compliance of clause 9.7, 9.8 and 9.9.1 Non-compliance of clause 9.10 and 9.13	Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any

		Non-compliance of clause 11.3.2 Exposed electric lines (fermentative damage) and circuits in the workplace. (clause 9.5.1) Inserting of wires directly into the socket Improper grounding for the electrical appliances (clause 9.7.1) Electrical cables running on the ground (clause 9.8.5 & 9.8.6) Non-compliance clause 10.0	single instance
4.	Hand tools and Power tools	Non-compliance of clause 11.0	Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance
5.	Gas Cutting	Wrong colour coding of cylinder. Cylinders not stored in upright position. (clause 12.1) Flash back arrester, non-return valve and regulator not present or not in working condition. (clause 12.3 & 12.4) Fail to put cylinders in a cylinder trolley. (clause 12.1) Damaged hose and fail to use hose clamps (clause 12.2) Using domestic LPG cylinders (clause 12.5) Fail to store cylinder 6.6m away from fire prone materials (clause 12.8) Fire extinguisher not placed in the vicinity during operation (clause 12.6)	Rs.10,000 per single violation Compounded to a maximum of Rs.50,000 at any single instance
6.	Welding	Voltmeter and Ammeter not working (clause 12.9) Non-availability of separate switch in the transformer (clause 12.9) Improper grounding and return path. (clause 12.10) Damaged and bare openings in the welding cable. (clause 12.10) Damaged holder (clause 12.10) Fire extinguisher not placed in the vicinity during operation (clause 12.6)	Rs.10,000 per single violation Compounded to a maximum of Rs.50,000 at any single instance
7.	Fire precaution	Smoking and open flames in fire prone area. Using more than 24V portable electrical appliances in the fire prone area. Not proper ventilation in cylinder storage area. (clause 12.0) Absence of fire extinguishers (clause 13.0) Fire extinguishers not refilled once in a year. (clause 13.0) Fire extinguisher placed in a not easily accessible location	Rs.5,000 per single violation Compounded to a maximum of Rs.25,000 at any single instance.
8.	Occupational Health	Fail to conduct Medical examination to workers (clause 17.1) Absence of ambulance van. Workers not having ID card (clause 3.0) Absence of first-aid person in work site. Absence or inadequacy of first-aid box. (clause 17.3.1) Misuse of first-aid box.	Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance

		First-aid box not satisfy the minimum Indian standard. Smoking inside the construction site (clause 17.4.2) Drink and drive or work (clause 17.4.1) Fumigation / insecticides not sprayed to prevent Mosquito breeding	
9.	Labour Welfare measures	Inadequate number of toilets. Toilets not cleaned properly Absence of water facilities for toilets and washing places Toilet placed more than 500m from the work site Accommodation not provided as per BOCWA Absence of drinking water (clause 19.0) Excessive noise and vibration (clause 18.0) Non adherence of Labour welfare provisions of BOCWA Fail to register establishment and display the registration certificate at workplace Absence of workers register and records Absence of muster roll and wages register Fail to display an abstract of BOCWA and BOCWR	Rs.10,000 per single violation Compounded to a maximum of Rs.50,000 at any single instance

23.0 Stoppage of work

23.1 The Employer shall have the right to stop the work at his sole discretion, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and / or property, and / or equipments. In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury / accident.

23.2 The contractor shall not proceed with the work until he has complied with each direction to the satisfaction of Employer.

23.3 The Contractor shall not be entitled for any damages / compensation for stoppage of work, due to safety reasons and the period of such stoppage of work shall not be taken as an extension of time for Completion of the Facilities and will not be the ground for waiver of levy of liquidated damages.

namma metro BMRCL	**BANGALORE METRO RAIL CORPORATION LTD.**
APPENDIX NO. 1	

Memorandum of Understanding between Bangalore Metro Rail Corporation (BMRC) and the Contractor for safe execution of contract work

This Memorandum of Understanding is made and executed by and between Bangalore Metro Rail Corporation Ltd. (BMRC), a Company registered under the Companies Act 1956 and having its registered office at 3rd floor, BMTC Complex, Shanthinagar, Bangalore or their authorized representative(s), hereinafter referred to as "EMPLOYER" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the one party

AND

M/s _____ having its registered office at _____ hereinafter referred to as the "CONTRACTOR" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the other party

WITNESSETH THAT

WHEREAS the EMPLOYER gives highest importance to the occupational safety, health and environment during execution of work, seeks cooperation from the CONTRACTOR in this endeavour.

Thus, this Memorandum of Understanding is for promoting the safety, health and environment aspects required to be followed at workplace/site and will be applicable to any site job to be done by the CONTRACTOR

AND

WHEREAS the CONTRACTOR has read all the terms and conditions of the EMPLOYER and whereas the CONTRACTOR has studied the following documents:

(a) Tender Documents, including Notice Inviting Tender, General Conditions, Special Conditions,
(b) Conditions of Contract on Safety, Health and Environment and Project Safety, Health and Environment Manual.
(c) Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996, Central Rules 1998 and subsequent Karnataka Government Rules 2006, Building and Other Construction Workers Welfare Cess Act 1996 and Rules 1998 and notification [Central & State] Collection of cess.
(d) Indian Electricity Act 2003 and Rules 1956.
(e) Corresponding International / Bureau of Indian Standard Codes.

The amendments to any of the above rules and any other rules & regulations or procedures, circulars, notices & advices laid down by the EMPLOYER from time to time.

Now it is hereby AGREED AND DECLARED by and between the EMPLOYER and the CONTRACTOR as follows:

Clause - I The CONTRACTOR shall undertake full responsibility for safe execution of job at work place/site and safety of his personnel and adjoining road users during work.

Clause - II Without giving any prior notice, the EMPLOYER shall from time to time be entitled to add/or amend any or all terms and conditions with a view to improving safety and occupational health of personnel and safety of work, with immediate effect and the same shall be binding on the CONTRACTOR. The contractor agrees to implement all such amendments, which shall be laid down by the EMPLOYER.

Clause – III Besides following the guidelines, safety rules and regulations, safety codes given in various safety procedures/documents mentioned above, the CONTRACTOR shall also prepare detailed method statement which includes job safety analysis wherever there are complicated and hazardous/high risk working involved and get it approved from Employer before execution of work.

Clause - IV Any negligence or violation in implementing any of the provision of the conditions of contract on Safety, Health & Environment, BMRC will view seriously and the contractor is liable to compensate the employer for the loss of reputation. The cost of damage shall be fixed on case-to-case basis.

In witness thereof the Parties hereto by representatives duly authorised have executed this Memorandum of Understanding on _____ day of _____ 20____.

Signed on	Signed on
For and on behalf of BMRC	For and on behalf of (Contractor)
_____	_____
Signature:	Signature:
Name:	Name:
Title:	Title:

Appendix No.2

namma metro BMRCL	**BANGALORE METRO RAIL CORPORATION LTD.**
	General Instruction: BMRC/SAFETY MANUAL

ID Card Format (85 mm x 55mm)

Front side of ID Card:

BMRCL PROJECT – "……"

Company Logo

Name & Address of Main / Sub / Labour contractor

Name:

Designation:

Blood Group:

Photo

Authorised Signatory

Backside of ID Card:

Employee Address:_____

1 **This card is the property of "XX" (Main / Sub / Labour Contractor) and must be returned on demand and on transfer / cancellation of employment.**

2 A charge will be levied for replacement of the card due to loss or theft

Main Contractors' Address

SECTION-L: PRICE BID (BoQ)

A. Preamble to Price Bid (BoQ)

1. Price Bid (BoQ) shall be read in conjunction with the Instructions to Tenderers, General Conditions of Contract & Contract Data, Special Conditions of Contract, Technical Specifications, Employer's Requirements-scope of work & Tender Drawings etc.
2. This Tender is a Percentage Tender. The Price Bid i.e. Bill of Quantities (BoQ) is made available in the KPP Portal for quoting the desired rates by the tenderer for each sub-estimate/ schedule / Item as the case may be. The tenderer shall fill in and complete the Bill of Quantities by entering the tender premium in **PERCENTAGE** (at par/ Excess / Less on total estimated cost) for each sub-estimate/ schedule / Item as the case may be online on the KPP Portal. **No hardcopy of commercials should be attached or disclosed elsewhere in tender submittals.** The Percentage rate quoted by the Tenderer shall be fixed for the duration of the Contract and shall not be subject to adjustment on any account.
3. The Tenderers Quoted Price i.e. total financial offer shall include all applicable taxes, duties, cess, royalties, and statutory levies as per the laws in force as on last day of the month previous to the month of invitation of this tender, except Goods and Services Tax (GST). BMRCL will reimburse GST to the Contractor based on the output GST levied on works contract services corresponding to the taxable value of the works executed and duly remitted by the Contractor. BMRCL will make this reimbursement upon receipt of a valid GST-compliant tax invoice submitted along with the Contractors Bills.
4. The Tenderer shall ascertain all applicable Taxes and Duties under the applicable Acts and shall be included in the quoted price. The quoted rates shall also include the cost of all labours, materials, plant, machinery, equipment, carriage, statutory clearances, providing barricade, putting up danger light, watch & ward, dewatering, strutting etc., complete and nothing extra will be paid.
5. The quoted rate shall be for completed and finished items of work and complete in all respects complying with the provisions of the Contract. It will be deemed to have included all constructional plant, machinery tools, setting up of batching plant, casting yard, materials, fuel, oil, consumables, electric power, water, transportation, all leads & lifts, dewatering, all temporary works & false works, construction of temporary stores & buildings, fencing, watering, lighting, erection, maintenance, night working and inspection facilities.
6. The quoted rates will be deemed to have included establishment & overhead charges, contractor's profit, supervision & other charges together with all general risks, liabilities and obligations set out or implied in the contract and including remedy of any defects during the Defect Liability Period.
7. The rate is inclusive of hardware and necessary fixtures for all kinds of Doors, windows and Ventilators in the relevant BoQ items. Absence of terms such as providing, supplying, laying, installing, fixing etc., in the descriptions does not even remotely suggest that the Contractor is absolved of such providing, supplying etc. unless an explicit stipulation is made in the contract
8. The quoted rates will be deemed to have included all the safety measures at work sites, safety measures for workmen & road users, safety of the public and protection of adjoining land & building while performing the work
9. The quoted rates will be deemed to have included accommodations for staff & workmen, all insurance costs for labour & works, the payment of all wages, salaries, fees if any, charges payable to various departments for obtaining necessary approvals if any.
10. The Tender Price shall be inclusive of all charges of insurance, transportation up to destination, handling, installation, royalties & any other charges leviable and payable by the Contractor under the Contract, or for any other cause and including Tax to be deducted at source and shall be included in the Total Tender Price.

11. The quoted rates shall be applicable to all heights, depths, leads, and lifts sizes, shapes and locations. They also cater for all cuts and wastes. No height wise / floor wise separation shall be made for the rates. Likewise, all heights of centering, shuttering, staging, formwork and scaffolding, launching trusses and other launching methods are covered by the quoted rates including multi stage propping for heights greater than one lift / floor as per drawings.
12. **Unpriced Items**: Items against which no rate or sum is entered in the Bill of Quantities, whether quantities are stated or not shall be regarded as covered by other Item rates in the BoQ. The Tenderer shall take regard of the actual site conditions and the items in the Bill of Quantities. The Tenderer shall price his Tender accordingly and the Percentage quoted (at par/ Excess / Less on estimated cost) in the BoQ shall be full and only price paid for all work performed against that item except as described in the Tender Documents.
13. If required by the Employer, the contractor is required to submit rates of all Items he has used to derive the tendered price inclusive of cost of all labour, materials, plant, machinery, equipment, carriage and other Inputs, taxes, royalties, all lead, lift, loading, unloading etc.
14. **Income Tax (IT) deduction**: As per the prevailing rate, IT shall be deducted and remitted to the Income Tax authorities and Form 16 shall be furnished by BMRCL in proof of remittance to IT Department. For availing lower deduction of Income Tax, necessary certificate for each financial year issued by the Income Tax Authority shall be furnished by the Contractor, failing which IT at the maximum rate will be deducted.
15. For all Reinforced Cement Concrete items, payment for reinforcement shall be paid separately under relevant BoQ item unless otherwise specified in the item.
16. The work is to be constructed as per BoQ description, Technical Specifications, GFC drawings, Specifications of KPWD, CPWD, MoRT&H and best Engineering practices and/or as directed by the Engineer.
17. The quantities given in the Price Bid (BoQ) is estimated (i.e. provisional). The basis of payment will be the actual quantities of work executed, as measured by the Contractor and verified by the Engineer and valued at the accepted rates in the Price Bid (BoQ).
18. Variations in BoQ quantities and additional item/s if any required during execution of work under this Contract shall be dealt as per **Clause 12 of General Conditions of Contract & Contract Data**.
19. The Tenderers Quoted Price shall be further adjusted for increase or decrease in rates and prices of labour, diesel, material, equipment, steel and cement if any provided for in **Clause 11.1.2 of General Conditions of Contract & Contract Data** during the period of the Contract and shall not be subject to adjustment on any other account.
20. Lump sum amount is catered for various items to be executed under BoQ Item Code: B3.0 of Sub Estimate No.2 (i.e. Schedule-B). The payment rates for Item Code B3.1, B3.2 & B3.3 will be arrived based on the unit rates (Excl. GST) provided in attachment to BoQ Item Code: B3.0 along with the tender premium in percentage quoted by the bidder for this tender. Similarly, the items to be executed under Schedule-F & G of BoQ shall be paid as per the Basic Rates provided for those items in respective Schedule of Rates (i.e. KPWD SR 2023-24/ DSR of CPWD-2025) along with the tender premium in percentage quoted by the bidder for this tender.

B. Bill of Quantities (Price Bid)

Item No.	Description of Item	Unit	Quantity	Rate (₹) (Excl. GST)	Amount (₹) (Excl. GST)
	SCHEDULE - A: PLANNING AND DESIGNING OF AREA DEVELOPMENT, HORTICULTURE AND LANDSCAPING WORKS				
A1.0	**Planning and Designing** of Area Development, **Horticulture and Landscaping works** including Irrigation system & Drainage system with available items of BOQ for an area of 12276 SQM (Approximate)	Lump Sum	1.00	95,000.00	95,000.00
	Note: 1. Rate also includes the preparation & submission of concept drawings & Finalized Detail Approved drawings (Hard Copy) of A1 size (2sets) & Soft copy (2 nos Re-submission of Revised Drawings after Final Approval from BMRCL) for execution of works. 2. Submission of As Built Drawings A1 size (3 sets) after completion of work. 3. Cost also includes the engagement of Architects and Horticulture Experts for Planning & Designing.				
	TOTAL OF SCHEDULE 'A'				**95,000.00**
	SCHEDULE - B: TREES, PLANTS, SHRUBS AND OTHERS				
B1.0	Providing and laying **Neelgiri/Mexican grass turf** with earth 50mm to 60mm thickness of existing ground prepared with proper level and ramming with tools wooden (Dhurmos) and then rolling the surface with light roller make the surface smoothen and light watering with sprinkler and maintenance till the grass establish properly, as per direction of officer-in-charge with all leads and lifts.	Per Sqm	3180.00	217.79	6,92,572.20
B2.0	Providing & laying **Selection no. 1 doob grass turf** with earth 50mm to 60mm thickness of existing ground prepared with proper level and ramming with required tools wooden and then rolling the surface with light roller make the surface smoothen and light watering the same maintenance for 30 days or more till the grass establish properly, as per direction of officer in charge with all leads and lifts	Per Sqm	4770.00	96.37	4,59,684.90
B3.0	Providing and Planting (Planting charges to be paid separately) of **different verities of Plants** for **Horticulture and Landscaping** works such as Tree plants, Foliage and Shade Loving Plants, Seasonal Plants, Ornamental Plants, Ground Covers Plants, Shrubs and Creeper Plants etc, in big poly bags of suitable size as per direction of the officer-in-charge with all leads and lifts.	LS	1.00	1500000.00	15,00,000.00
	Notes for item Code: B3.0 *1. Contractor shall select the items of various species of plants, trees, shrubs, creepers & hedges to suite the weather condition of particular area from the items listed in the* ***attachment to Item Code: B3.0 of Sub Estimate No.2 (i.e. Schedule-B).*** *2. The Number of individual plants shall be varied as per site requirement / approved concept drawing, but should not exceeding the overall quantity mentioned for item B3.1, B3.2, and B3.3 respectively.* *3. The Rate for the selected / approved plants shall be considered from the items listed in the* ***attachment to Item Code: B3.0 of Sub Estimate No.2 (i.e. Schedule-B).*** *4. The Cost of selected / approved plants with payment rate as per Note-3 above in the form of BoQ shall be submitted under head of item No. B3.1, B3.2, and B3.3 respectively.* *5. The upper limit of cost of Item Code: B3.0 of Sub Estimate No.2 (i.e. Schedule-B) should be as per contractual pricing document (Contractual BoQ).*				

B3.1	Providing and Planting of **Tree plants**	Nos	500.00		
B3.2	Providing and Planting of **Shrubs plants**	Nos	2500.00		
B3.3	Providing and Planting of **Hedge/Ground cover plants**	Nos	9450.00		
B4.0	**Plantation** of Trees, Shrubs, and Hedge, Ground covers and seasonal plants at site i/c watering and removal of unsaverieable material's as per direction of officer in charge (excluding cost of plant & water)				
B4.1	Cost of plantation per Trees plant	Nos	500.00	9.45	4,725.00
B4.2	Cost of plantation per Shrubs plant	Nos	1000.00	4.70	4,700.00
B4.3	Cost of plantation per Hedge/Ground cover plant	Nos	10950.00	3.15	34,492.50
	TOTAL OF SCHEDULE 'B'				**26,96,174.60**
	SCHEDULE - C: EARTHWORK AND OTHER RELATED WORKS FOR HORTICULTURE & LANDSCAPPING				
C1.0	**Trenching in ordinary soil** up to a depth of 60 cm including removal and stacking of serviceable materials and then disposing of surplus soil, by spreading and neatly levelling with all leads and lifts and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or / and manure before and after flooding trench with water (excluding cost of imported earth, sludge or manure).	Cum	4770.00	100.85	4,81,054.50
C2.0	Supplying and stacking of **good earth** at site including royalty and carriage with all lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	2443.00	681.15	16,64,049.45
C3.0	Supplying and stacking **sludge** at site including royalty and carriage with all lead complete (sludge measured in stacks will be reduced by 8% for payment).	Cum	1457.00	365.91	5,33,130.87
C4.0	**Mixing earth and sludge or manure** in the required proportion specified or directed by the Officer-in-charge with all leads and lifts	Cum	6343.00	47.22	2,99,516.46
C5.0	**Spreading of sludge, dump manure and/or good earth** in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately) with all leads and lifts	Cum	6343.00	67.54	4,28,406.22
C6.0	Supplying and stacking at site **dump manure** from approved source, including carriage with all lead complete (manure measured in stacks will be reduced by 8% for payment):				
C6.1	Screened through sieve of I.S. designation 20 mm	Cum	75.00	331.64	24,873.00
C6.2	Screened through sieve of I.S. designation 16 mm	Cum	75.00	378.86	28,414.50
C6.3	Screened through sieve of I.S. designation 4.75 mm	Cum	75.00	416.63	31,247.25
C7.0	Supplying and stacking of **well decayed cattle manure** at site including royalty and carriage with all leads and lifts complete (Cattle manure measured in stacks will reduced by 8% for Payment).	Cum	52.50	565.34	29,680.35
C8.0	**Preparation of beds** for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, levelling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and levelling as directed, with all leads and lifts complete (cost of sludge, manure or extra earth to be paid for separately).	Cum	1157.00	288.03	3,33,250.71

C9.0	**Digging holes in ordinary soil** and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20%: 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any, with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately).				
C9.1	Holes 1.2 m dia and 1.2 m deep.	Cum	13.60	307.40	4,180.64
C9.2	Holes 90 cm dia, and 90 cm deep.	Cum	57.20	131.78	7,537.82
C9.3	Holes 60 cm dia, and 60 cm deep.	Cum	235.70	40.57	9,562.35
C9.4	Holes 45 cm dia, and 45 cm deep.	Cum	107.30	17.50	1,877.75
C10	Providing **Circular Cement Concrete pots** of specified size, cast with cement concrete of nominal mix 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 6 mm nominal size), reinforced with 7 Nos (3 no's horizontal & 4 no's vertical " U " shape) M.S. wires of 3.5 mm dia as per design, including required form work, finishing with cement punning on exposed surface, curing for specified period and stacking in required rows & height, with all leads and lifts and all complete as per direction of Officer-in-charge.				
C10.1	Top inside dia 35 cm, outer bottom dia 25 cm, total height 35 cm with wall thickness of 25.4 mm	Each	50.00	311.35	15,567.50
C10.2	Top inside dia 30 cm, outer bottom dia 20 cm, total height 30 cm with wall thickness of 25.4 mm	Each	25.00	253.35	6,333.75
C11	Providing **Square Cement Concrete pots** of specified size, cast with cement concrete of nominal mix 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 6 mm nominal size), reinforced with 7 Nos (3 no's horizontal & 4 no's vertical " U " shape) M.S. wires of 3.5 mm dia as per design, including required form work, finishing with cement punning on exposed surface, curing for specified period and stacking in required rows & height, with all leads and lifts and all complete as per direction of Officer-in-charge. Top inner width 35 cm, outer bottom width 25 cm, total height 35 cm with wall thickness of 25.4 mm	Each	25.00	357.35	8,933.75
C12	**Filling** of the following size **empty pots** with mixture of good earth & manure in the ratio of 2:1 (Two part of Good earth & one port of manure) and placing them on appropriate place i/c carriage of earth, manure and pots with all leads and lifts, as per direction of officer in charge. (The cost of good earth, earthen pots & manure will be paid separately.)				
C12.1	Size of Empty Pots 35cm Top dia, 25cm Bottom Dia & 35cm Perpendicular height.	Each	50.00	59.22	2,961.00
C12.2	Size of Empty Pots 30cm Top dia, 20cm Bottom Dia & 30cm Perpendicular height.	Each	25.00	46.83	1,170.75
C12.3	Size of Empty Pots 35cm Top width, 25cm Bottom width & 35cm Perpendicular height.	Each	25.00	66.03	1,650.75
C13	**Anti-termite treatment** by digging holes 30 cm deep and 4 cm dia, 6 to 7 holes around the tree using chemical emulsion at the rate of 1.5 litre per hole in two time or more application to get the trees free from termite infection chemicals used Chlorpyriphos 20% EC in the ratio of 1% concentration and as per direction of officer-in-charge.	Each Tree	500.00	59.54	29,770.00
C14	**Earth work in surface excavation** not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including disposal of excavated earth with all leads and lifts, as per directions of Engineer-in-charge All kinds of soil	Sqm	7950.00	117.10	9,30,945.00
C15	**Earth work in excavation** by mechanical means (Hydraulic excavator) / manual means **over areas** (**exceeding 30 cm in depth**, 1.5 m in width as well as 10 sqm on plan), including disposal of excavated earth, with all leads and lifts as per directions of Engineer-in-charge.	Cum	1000.00	147.26	1,47,260.00

	All kinds of soil				
C16	**Earth work in excavation** by mechanical means (Hydraulic excavator) / manual means **in foundation trenches or drains or pipe line** (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, with all leads and lifts, including getting out the excavated soil and disposal of surplus excavated soil as directed, with all leads and lifts All kinds of soil	Cum	197.00	215.53	42,459.41
C17	Supplying and **spreading of sand in lawn area**, including watering, and dressing complete with all leads and lifts	Cum	60.00	1770.27	1,06,216.20
C18	Clearing / **cleaning of site** by removing unwanted weeds, shrubs and small trees etc., and disposal with all leads and lifts. Medium jungle clearance	Ha	0.31	29768.75	9,228.31
C19	**Ploughing the existing ground** to a depth of 15 cm to 25 cm and watering the same with all leads and lifts. All kinds of soil	Sqm	2500	31.21	78,025.00
	TOTAL OF SCHEDULE 'C'				**52,57,303.29**
	SCHEDULE - D: WATER SUPPLY AND IRRIGATION WORKS				
D1.0	Supplying **PVC ring tight pipes** conforming to IS 4985:2000 with latest amendments and conveying to work site, rolling and lowering into trenches, laying true to line and level and perfect linking at joints, testing and commissioning, including loading unloading at both destinations and cuts of pipes wherever necessary including jointing of PVC pipes and specials (excluding cost of specials) with jointing of approved type, with all labour with all lead & lift including encasing the pipe allround to a depth of not less than 15 cms. with soft gravel or selected earth available from the excavation etc. complete and giving necessary hydraulic test to the required pressure as per ISS (Contractor will make his own arrangements for procuring water for testing) etc. for: **PVC 25 MM DIA**	RMT	700.00	52.80	36,960.00
D2.0	Providing and fixing **CPVC pipes** confirming to IS 15778 having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipes with clamps at 1.00 mt spacing. This includes jointing of pipes and fitting with one step CPVC solvent cement and testing of joints complete (internal works exposed on wall) with all leads & lift at all levels.				
D2.1	20mm Dia.	RMT	100.00	266.20	26,620.00
D2.2	15mm Dia.	RMT	100.00	200.20	20,020.00
D3.0	Supplying & Fixing **UPVC soil and waste pipes/vent** ISi marked SWR jointed with solvent cement/rubber ring joints and further protected with fibre glass paste, including all specials such as bends, tees, reducers etc., with or without door as required, including any cutting & making good of floors/walls that may be necessary, clamps and stays as per requirements. The pipes laid above the floor level (sunken level), it should be rigidly fixed with PCC bedding and levelled at every 1 meter intervals with all leads & lift at all levels- 50mm Dia.	RMT	100.00	424.60	42,460.00
D4.0	Providing and fixing in position **brass ball valve** high or low pressure with plastic float of approved quality **20 mm nominal bore** including cost of materials, labour and HOM of equipments with all leads & lifts complete as per specifications.	Each	60.00	345.40	20,724.00
	TOTAL OF SCHEDULE 'D'				**1,46,784.00**
	SCHEDULE - E: ANNUAL MAINTAINANCE OF HORTICULTURE AND LANDSCAPING WORKS FOR 12 MONTHS				

E1.0	**Complete maintenance of the garden area** i.e. lawn trees, shrubs, herbs, edge, flower beds, foliage, creepers etc. including hoeing, weeding, pruning, replacement of plants, gap filling, watering, mowing of lawn, grass cutting by lawn mover and brush cutter, removal of garden waste, applying insecticide, pesticide & fertilizers (whenever required) top dressing of lawn with good earth and manure and maintenance of other garden related works as directed by office-in-charge (Cost of Good Earth, Manure, Fertilizer, Insecticide, Pesticide will be paid separately & lawn mover and brush cutter with fuel and other T & P material/articles shall be provided by the contractor at his own cost.) and as per direction of officer in charge.	Per Sqm per month	1,47,312.00	4.95	7,29,194.40
E2.0	Providing and **watering** of irrigation water **through water tanker** of Horticulture features i.e. lawn, tree, shrubs, hedge/edge, ground cover etc. at the site of work. Water tanker having **5000 lit. Capacity** with one labour for watering i/c cost of water, filling of tanker, watering at site with all leads and lifts as per direction of officer-in-charge (Rate includes all tools, machinery and manpower). Note: Contractor should preferably use treated water from STP/ ETP of the Depot and Car wash plant for Horticulture purpose. In case of shortage of water from Treatment plant, contractor has to operate this item.	Per Trip	385.00	1104.58	4,25,263.30
E3.0	**Cutting of Hedge/Edge** including removing of cut material, cleaning, hoeing of hedge/edge bed watering, manureing and applying insecticides and fungicides etc. (excluding the cost of material which will be paid separately) and as per direction of officer in charge (Rate includes all tools, machinery and manpower). Hedge cutting (Normal Hedge) **upto 1.2 meter height**	Per mtr per month	15420.00	9.10	1,40,322.00
E4.0	**Cutting of designer hedge/edge** removing of cut materials, cleaning, hoeing of hedge/edge bed watering manure and applying insecticides and fungicides etc. (excluding the cost of material which will be paid separately) and as per direction of officer in charge (Rate includes all tools, machinery and manpower).	Per mtr per month	4200.00	18.15	76,230.00
E5.0	**Maintenance of Potted Plants** inculding watering, weeding, hoeing, colouring, reporting of the damaged pots and disposal of generated garbage at specified place as per direction of officer-in-charge. (Rate includes all tools, machinery and manpower).	Per pot per month	1200.00	12.30	14,760.00
	TOTAL OF SCHEDULE 'E'				**13,85,769.70**
	SCHEDULE - F: ITEMS UNDER SCHEDULE OF RATES 2023-24 OF KPWD PUBLISHED BY GOVERNMENT OF KARNATAKA				
F1.0	Items not covered in BOQ schedules from A to E, to be executed under Schedule of Rates 2023-24 of KPWD published by Government of Karnataka.	Lump Sum	1.00	2,50,000.00	2,50,000.00
	TOTAL OF SCHEDULE 'F'				**2,50,000.00**
	SCHEDULE - G: ITEMS UNDER DELHI SCHEDULE OF RATES 2025 CPWD PUBLISHED BY GOVERNMENT OF INDIA				
G1.0	Items not covered in BoQ schedules from A to E, to be executed under DELHI SCHEDULE OF RATES, ANALYSIS OF RATES AND SPECIFICATIONS (HORTICULTURE & LANDSCAPING) Published by CPWD- 2025.	Lump Sum	1.00	2,50,000.00	2,50,000.00
	TOTAL OF SCHEDULE 'G'				**2,50,000.00**
	Total Estimated Amount (Schedules "A" to "G")				**1,00,81,031.59**
	Tender premium in Percentage (at par/ Excess / Less on Total Estimated Amount)				
	Grand Total Amount (₹)				

Attachment to BoQ Item Code:B3.0 of Sub Estimate No.2 (SCHEDULE-B TREES, PLANTS,SHRUBS AND OTHERS)

List of Plants & their Rates as per DSR - 2025 (Horticulture & Landscaping)

Item No	Description	Unit	Unit Rate (₹) Excl. GST
SUB HEAD : 3.0 - FOLIAGE AND SHADE LOVING PLANTS			
3.01	Aglaonema Parrot Jungle plant (three in one)	Each	62.75
3.02	Aglaonema dove variety	Each	78.43
3.03	Aglaonema Pseudo bractatum plants	Each	78.43
3.04	Aglaonema Snow White hybrid plant (three in one)	Each	203.90
3.05	Aglaonema Silver Queen	Each	146.40
3.06	Aglaonema ernesto Plant (three in one)	Each	167.29
3.07	Aglaonema marentifolium variety	Each	62.75
3.08	Aglaonema modestum	Each	62.75
3.09	Aglaonema nitida	Each	146.40
3.10	Araucaria cookie having ht. 60 cm to 75 cm	Each	172.54
3.11	Araucaria cookie having ht. 75 cm to 90 cm	Each	198.64
3.12	Araucaria cookie having ht.1.20 m to 1.35 m	Each	334.58
3.13	Araucaria cookie having ht.1.80 m to 1.95 m	Each	470.51
3.14	Areca Palm having ht. 90 cm to 1.20 m	Each	146.40
3.15	Areca Palm having ht. 1.20 m to 1.50 m	Each	156.82
3.16	Areca palm having ht. 1.50 m to 1.80 m	Each	182.97
3.17	Areca Palm having ht. 1.80 m to 2.10 m	Each	324.15
3.18	Areca Palm having ht. 2.40 m to 2.70 m	Each	548.94
3.19	Brassia Variegated having ht. 30 cm	Each	69.03
3.20	Brassia Variegated having ht. 30 cm to 45 cm	Each	104.58
3.21	Chamaedorea elegans palm	Each	99.32
3.22	Croton Challenger variety	Each	41.82
3.23	Croton baby golden variety	Each	37.63
3.24	Croton Baby Golden Punctatumaureum	Each	31.36
3.25	Croton Golden	Each	52.29
3.26	Croton Baby Golden plant (three in one)	Each	78.43
3.27	Croton Golden (Broad Leaves)	Each	52.29
3.28	Croton Golden specimen	Each	156.82
3.29	Croton Duck Foot (Elite) having ht. 45 cm and above	Each	99.32
3.30	Croton Duck Foot (Elite) having ht. 60 cm to 75 cm	Each	287.54
3.31	Croton Petra Bangalore variety having ht 45 cm & above	Each	104.58
3.32	Croton Petra having ht. 45 cm & above	Each	109.79
3.33	Croton Petra Bangalore variety having ht. 60 cm to 75 cm	Each	308.43
3.34	Croton Petra Bangalore (Specimen) variety having ht. 60 cm to 75 cm	Each	470.51
3.35	Dieffenbachia Tropic-snow	Each	73.18
3.36	Dieffenbachia Mosaic having ht. 30 cm to 45 cm	Each	73.18

3.37	Dieffenbachia Maculata having ht. 45 cm to 60 cm	Each	135.93
3.38	Dracaena ‘Song of India’ plant (three in one)	Each	104.58
3.39	Dracaena ‘Song of India’ specimen plant (three in one)	Each	125.47
3.40	Dracaena ‘Song of India’ Green plant (three in one)	Each	41.82
3.41	Dracaena ‘Song of India’ variegated	Each	41.82
3.42	Dracaena Kedarnath	Each	41.82
3.43	Dracaena Marginataharge.	Each	43.90
3.44	Dracaena Mahatma	Each	41.82
3.45	Dracaena Rosea	Each	41.82
3.46	Dracaena Victoria	Each	54.36
3.47	Dracaena Fragrans"Massangeana"	Each	54.36
3.48	Dracaena Warneckii	Each	52.29
3.49	Livistona Palm having ht. 30 cm to 45 cm	Each	78.43
3.50	Livistona Palm having ht. 60 cm to 75 cm	Each	188.22
3.51	Monestaria plant mounted on moss stick 90 cm ht.	Each	188.22
3.52	Money Plant Broad Leaves mounted on moss stick 90 cm ht.	Each	177.75
3.53	Money Plant Broad Leaves mounted on moss stick 1.20 m ht.	Each	235.25
3.54	Money Plant Golden leaves mounted on moss stick 90cm ht.	Each	177.75
3.55	Philodendron Burgundy plant mounted on moss stick 90 cm ht.	Each	219.58
3.56	Philodendron emerald red colour mounted on moss stick 90 cm ht.	Each	292.75
3.57	Philodendron Envy mounted on moss stick 90 cm ht.	Each	392.12
3.58	Philodendron Oxicodium mounted on moss stick 90 cm ht.	Each	151.61
3.59	Philodendron Oxicodium Golden Colour Mounted on moss stick 90 cm ht.	Each	156.82
3.60	Philodendron Oxicodium Golden Colour Mounted on moss stick 1.20 m ht.	Each	209.11
3.61	Philodendron Oxicodium mounted on moss stick 1.20 m ht.	Each	219.58
3.62	Philodendron Selloum having ht. 30 cm to 45 cm	Each	151.61
3.63	Philodendron Selloum having ht. 45 cm to 60 cm	Each	198.64
3.64	Philodendron Ceylon gold	Each	167.29
3.65	Philodendron Xanadu	Each	169.41
3.66	Philodendron Moonlight	Each	182.97
3.67	Phoenix Palm	Each	198.64
3.68	Rhapis Palm having ht. 45 cm to 60 cm	Each	172.54
3.69	Rhapis Palm having ht.75 cm to 90 cm with 12 to 15 suckers	Each	303.22
3.70	Rhapis Palm having ht.75 cm to 90 cm with 15 to 18 suckers	Each	334.58
3.71	Rhapis Palm specimen	Each	507.12
3.72	Seaforthia Palm having ht. 90cm to 1.20 m with 6-8 suckers	Each	326.23
3.73	Seaforthia Palm having ht. 1.20 m. to 1.50 m. with 8-10 suckers	Each	371.19
3.74	Seaforthia Palm having ht. 1.50 m to 1.80 m with 12-15 suckers	Each	470.51
3.75	Sanchezia Nobili's	Each	33.47
3.76	Schefflera high colour	Each	37.63
3.77	Schefflera high colour plant (three in one)	Each	125.47
3.78	Schefflera Green plant (three in one), mounted on moss stick 90 cm	Each	250.93
3.79	Schefflera Variegated mounted on moss stick 90 cm ht.	Each	250.93

3.80	Syngonium golden mounted on moss stick 90 cm ht.	Each	167.29
3.81	Syngonium Variegated mounted on moss stick 90 cm ht.	Each	167.29
3.82	Aglaonema Butterfly plant	Each	175.68
3.83	Aglaonema Ice plant	Each	175.68
3.84	Aglaonema sam plant	Each	188.22
3.85	Araucaria cookie plant	Each	235.25
3.86	Brassia hicolour 3 in 1	Each	115.00
3.87	Diffenbachia superba	Each	146.40
3.88	Dreaceana pendanus	Each	172.54
3.89	Rubber plant black variety	Each	83.64
3.90	Rubber plant variegated	Each	125.47
3.91	Schefflera green 3 in 1	Each	172.54
3.92	Spathiphyllum (peace lilly)	Each	85.72
3.93	Adenium (grafted)	Each	339.83
3.94	Aglaonema Catherine having ht. 15 cm and above	Each	261.40
3.95	Aglaonema Catherine having ht. 20 cm and above	Each	334.58
3.96	Aglaonema Lipstick	Each	261.40
3.97	Aglaonema sam plant	Each	261.40
3.98	Aglaonema snow white	Each	261.40
3.99	Anthurium plants	Each	261.40
3.100	Areca Palm (dwarf) having ht. 60 cm to 75 cm	Each	261.40
3.101	Areca Palm (dwarf) having ht. 90 cm to 105 cm	Each	433.94
3.102	Chamaedorea elegans palm	Each	235.25
3.103	Chlorophytum-variegated	Each	182.97
3.104	Draceana golden	Each	156.82
3.105	Money plant (Golden or Variegated or Green)	Each	209.11
3.106	Philodendron Envy	Each	287.54
3.107	Philodendron Moonlight	Each	146.40
3.108	Radermachera plant having 60 cm to 75 cm height	Each	261.40
3.109	Radermachera plant having 90 cm to 105 cm height	Each	365.97
3.110	Radermachera plant having 150 cm and above height	Each	470.51
3.111	Sansevieria dwarf	Each	209.11
3.112	Sansevieria variegated	Each	261.40
3.113	Spathiphyllum (peace lilly), having 20 cm and above ht.	Each	219.58
3.114	Spathiphyllum (peace lilly) having ht. 25 cm and above	Each	271.86
3.115	Zanzibar Gem having height 15 cm and above	Each	261.40
3.116	Zanzibar Gem having height 20 cm and above	Each	339.83
SUB HEAD : 4.0 SEASONAL PLANTS			
	Winter Seasonal Plants		
4.01	Allyssum white	Each	39.75
4.02	Anemone hybrid (3 in one) variety	Each	73.18
4.03	Antirrhinum Hybrid Dwarf variety (3 in one)	Each	52.29
4.04	Antirrhinum Hybrid dwarf variety, specimen (8 to 10 plants)	Each	480.97
4.05	Antirrhinum variety	Each	50.17
4.06	Asiatic lilly hybrid variety (3 in one)	Each	115.00

4.07	Aster Hybrid variety in different colour	Each	39.75
4.08	Begonia wax having 15 to 25 cm ht.	Each	57.50
4.90	Brachycome	Each	115.00
4.10	Calceolaria hybrid variety	Each	104.58
4.11	Calendula double variety	Each	50.17
4.12	Chrysanthemum double variety	Each	109.79
4.13	Chrysanthemum single variety in different colour	Each	115.00
4.14	Chrysanthemum single named variety in different colour	Each	135.93
4.15	Cineraria dwarf in different colour	Each	50.17
4.16	Cineraria Hybrid dwarf variety in different colour	Each	57.50
4.17	Cineraria	Each	115.00
4.18	Clarkia	Each	94.11
4.19	Clianthus	Each	73.18
4.20	Coleus broad leaves having 3 to 4 branches	Each	50.17
4.21	Coleus broad leaves having 5 to 6 branches	Each	78.43
4.22	Cyclamen hybrid variety	Each	198.64
4.23	Cyclamen hybrid variety specimen 5 to 6 plants	Each	731.91
4.24	Dahlia double kenya variety in different colour	Each	78.43
4.25	Dahlia single in different colour	Each	23.01
4.26	Daisy	Each	39.75
4.27	Dianthus dwarf in different colour	Each	39.75
4.28	Dianthus dwarf specimen 6 to 8 plants	Each	324.15
4.29	Dianthus in different colour	Each	50.17
4.30	Freesia hybrid 6 to 8 plants	Each	75.30
4.31	Gazania hybrid in different colour	Each	57.50
4.32	Geranium double variety	Each	125.47
4.33	Gerbera Hybrid	Each	78.43
4.34	Helianthus different colour	Each	188.22
4.35	Impatiens in different colour	Each	99.32
4.36	Marigold jaffri dwarf in different colour	Each	50.17
4.37	Marigold jaffri orange/yellow/Russet colour	Each	99.32
4.38	Marigold jaffri french orange/yellow/ Russet colour	Each	135.93
4.39	Kalanchoe Hybrid variety in different colour	Each	50.17
4.40	Marigold(Tagetes) inca hybrid different colour	Each	60.64
4.41	Mimulus multi branching bushy in different colour	Each	67.97
4.42	Mesembryanthemum in different colour	Each	29.28
4.43	Nemesia	Each	50.17
4.44	Nasturtium in different colour	Each	50.17
4.45	Ornamental Kale Hybrid variety	Each	50.17
4.46	Pansy Hybrid Sakata in different colour	Each	287.54
4.47	Pansy Hybrid Sakata	Each	50.17
4.48	Pansy hybrid sakata in different colour	Each	25.08
4.49	Petunia hybrid different colour single	Each	39.75
4.50	Petunia hybrid different variety in different colour	Each	60.64
4.51	Petunia hybrid in different colour	Each	20.93
4.52	Petunia hybrid	Each	287.54

4.53	Phlox in different colour	Each	50.17
4.54	Poinsettia Dwarf variety different colour	Each	173.56
4.55	Poinsettia dwarf multi head	Each	242.58
4.56	Primula Hybrid variety specimen 5 to 6 plants	Each	397.33
4.57	Primula Hybrid variety	Each	78.43
4.58	Ranunculus Hybrid variety in different colour specimen 5 to 6 plants	Each	470.51
4.59	Ranunculus Hybrid variety	Each	99.32
4.60	Salvia dwarf variety	Each	25.08
4.61	Salvia ht. 45 to 60 cm multi branches stacking with bamboo stick specimen type in 30cm	Each	115.00
4.62	Salvia ht. 45 to 60 cm multi branches stacking with bamboo stick specimen type in 25cm	Each	94.11
4.63	Salvia red Hybrid dwarf variety having 15 cm to 25 cm ht. in 20 cm	Each	50.17
4.64	Salvia red Hybrid dwarf variety having 15 to 25 cm ht., specimen 6 plants in 35 cm	Each	287.54
4.65	Star of Bethlehem (Chinchi - Rinchi), 5 to 6 plants	Each	313.69
4.66	Stock Double Blue non-branching having 30 to 45 cm ht.	Each	50.17
4.67	Stock double white colour dwarf variety	Each	57.50
4.68	Stock single in different colour	Each	50.17
4.69	Tulip Dutch hybrid variety (3 in one)	Each	172.54
4.70	Verbena in different colour having 30 to 45 cm ht.	Each	60.64
	SUMMER & RAINY SEASONAL PLANTS		
4.71	Celosia	Each	50.17
4.72	Caladium Hybrid variety	Each	60.64
4.73	Cockscomb	Each	39.75
4.74	Cosmos	Each	39.75
4.75	Gaillardia double hybrid variety	Each	50.17
4.76	Gomphrena	Each	39.75
4.77	Kochia 20 to 25 cm ht. lush green	Each	30.34
4.78	Kochia 30 to 45 cm ht. lush green	Each	39.75
4.79	Portulaca hybrid in different colour	Each	75.30
4.80	Sunflower hybrid	Each	31.36
4.81	Sunflower single	Each	60.64
4.82	Tapioca variegated (Manihot esculenta)	Each	31.36
4.83	Vinca different colour 6 to 8	Each	50.17
4.84	Vinca different colour	Each	25.08
4.85	Vinca Hybrid in different colour	Each	39.75
4.86	Zinnia hybrid double in different colour	Each	41.82
4.87	Motia	Each	37.63
4.88	Mogra	Each	42.88
4.89	Canna dwarf	Each	33.47
	ROSE PLANTS		
4.90	Bush Rose in different colour	Each	24.07
4.91	Budded Rose (H.T. variety)	Each	30.34
4.92	Creeper Rose variety	Each	67.97
4.93	Standard Rose (H.T. variety)	Each	135.93

4.94	Begonia wax different colour	Each	287.54
4.95	Chrysanthemum multiflora variety of different colour	Each	214.36
4.96	Kalanchoe Hybrid variety of different colour	Each	41.82
4.97	Amaranthus hybrid	Each	50.17
4.98	Balsum of different colour	Each	50.17
4.99	Mirabilis jalapa of different colour	Each	50.17
4.100	Pentas of different colour	Each	115.00
4.101	Ruellia dwarf of different colour	Each	39.75
4.102	Torenia	Each	39.75
4.103	Zephyranthes sp. (Rain lily)	Each	73.18
4.104	Zinnia hybrid of different colour	Each	31.36
	Winter Seasonal Plants in poly bag		
4.105	Allyssum in different colour	Each	12.25
4.106	Antirrhinum Hybrid dwarf variety	Each	14.28
4.107	Aster dwarf hybrid in different colour	Each	12.25
4.108	Begonia wax hybrid in different colour	Each	16.31
4.109	Calendula Double	Each	14.28
4.110	Cineraria Hybrid dwarf in different colour	Each	15.30
4.111	Coleus broad leaf in different colour	Each	12.25
4.112	Coreopsis	Each	10.21
4.113	Dahlia double different variety in different colour	Each	22.46
4.114	Dahlia single in different colour	Each	10.21
4.115	Dianthus hybrid in different colour	Each	12.25
4.116	Gazania hybrid in different colour	Each	10.21
4.117	Impatiens hybrid in different colour	Each	22.46
4.118	Kalanchoe in different colour	Each	12.25
4.119	Marigold French Hybrid dwarf in different colour	Each	12.25
4.120	Marigold Inca hybrid dwarf in different colour	Each	12.25
4.121	Mesembryanthemum in different colour	Each	10.21
4.122	Nasturtium in different colour	Each	10.21
4.123	Nemesia in different colour	Each	12.25
4.124	Pansy Hybrid in different colour	Each	13.77
4.125	Petunia hybrid in different colour	Each	12.25
4.126	Phlox in different colour	Each	12.25
4.127	Salvia Desi	Each	11.23
4.128	Salvia dwarf Hybrid in different colour	Each	12.25
4.129	Stock double in different colour	Each	12.25
4.130	Stock single in different colour	Each	10.21
4.131	Verbena hybrid dwarf in different colour	Each	12.25
	Summer/Rainy Seasonal Plants in poly bag		
4.132	Balsam in different colour	Each	13.26
4.133	Celosia in different colour	Each	12.75
4.134	Cockcomb in different colour	Each	14.28
4.135	Cosmos Hybrid in different colour	Each	14.28
4.136	Double in different colour	Each	12.75
4.137	Gomphrina Hybrid	Each	13.26

4.138	Kochia	Each	10.21
4.139	Portulaca Hybrid in different colour	Each	11.23
4.140	Ruellia Dwarf in different colour	Each	12.25
4.141	Sunflower Hybrid in different colour	Each	12.25
4.142	Tapioca Variegated	Each	15.30
4.143	Verbena Perennial in different colour	Each	10.21
4.144	Vinca Hybrid in different colour	Each	12.25
4.145	Vinca in different colour	Each	10.21
4.146	Zinnia in different colour	Each	11.23
SUB HEAD : 5.0 ORNAMENTAL PLANTS			
5.01	Acalypha Different colour	Each	33.47
5.02	Acalypha green	Each	33.47
5.03	Acalypha red	Each	37.63
5.04	Acalypha twisted	Each	37.63
5.05	Adenium Obesum grafted 30 cm to 60 cm ht.	Each	263.47
5.06	Adenium Obesum grafted 60 cm to 75 cm ht.	Each	522.80
5.07	Bamboo Buddha valley having 75 cm to 90 cm ht.	Each	423.47
5.08	Bamboo Buddha valley variety having 120 cm to 135 cm ht.	Each	951.48
5.09	Bamboo Buddha Valley 1.80 m to 2.10m ht.	Each	1312.25
5.10	Bird of paradise	Each	355.51
5.11	Bismarckia Palm 115 cm to 180 cm ht.	Each	1814.11
5.12	Bougainvillea	Each	402.54
5.13	Cycus cirsnallis	Each	1829.79
5.14	Cycus revoluta	Each	1097.88
5.15	Cycus revoluta specimen	Each	1422.03
5.16	Cyprus Golden	Each	350.30
5.17	Cyprus golden	Each	397.33
5.18	Cyprus Golden	Each	1510.89
5.19	Euphorbia milli hybrid variety	Each	601.23
5.20	Ficus black vivion piller Topiary (Cylinder type)	Each	1882.08
5.21	Ficus Long Island Topiary	Each	1097.88
5.22	Ficus Nuda Topiary	Each	2352.58
5.23	Ficus Nuda	Each	313.69
5.24	Ficus Retusa Topiary	Each	2038.94
5.25	Ficus reginold	Each	345.04
5.26	Ficus reginold piller type Topiary	Each	2091.19
5.27	Ficus reginold Topiary	Each	1829.79
5.28	Ficus Starlight	Each	805.13
5.29	Fishtail palm	Each	282.33
5.30	Foxtail palm	Each	1097.88
5.31	Furcaria variegated	Each	188.22
5.32	Furcaria Variegated hybrid	Each	418.22
5.33	Golden Bottle brush Topiary	Each	888.77
5.34	Zamia palm	Each	846.95
5.35	Latania Rubra Palm	Each	941.06

5.36	Mascarena palm	Each	1725.25
5.37	Phoenix roebelenii palm	Each	496.65
5.38	Topiary plant of Ficus Bush Kingficer-in-charge.	Each	1150.17
5.39	Topiary plant of Ficus Nuda	Each	1150.17
5.40	Topiary plant of Ficus Panda	Each	1045.59
5.41	Topiary Casuarina plant	Each	1024.70
5.42	Travellers palm	Each	449.62
5.43	Travellers palm	Each	899.24
5.44	Washingtonia filifera palm	Each	496.65
5.45	Allamanda of different colour	Each	203.90
5.46	Bismarckia Palm	Each	1411.57
5.47	Bougainvillea 40 cm to 50 cm ht.	Each	256.19
5.48	Bougainvillea 60 cm to 75 cm ht.	Each	308.43
5.49	Conocarpus having 90 cm to 120 cm ht.	Each	313.69
5.50	Conocarpus having 150 to 180 cm ht.	Each	522.80
5.51	Crossandra infundibuliformis plant having ht. 45 cm to 60 cm multibranch	Each	156.82
5.52	Ficus black vivion piller Topiary (Cylinder type)	Each	1306.99
5.53	Ficus Safari	Each	167.29
5.54	Hibisicus hybrid dwarf different flower colour	Each	125.47
5.55	Ixora dwarf different colour	Each	125.47
5.56	Ixora singaporensis different colour	Each	130.72
5.57	Lantana sp. of different colour	Each	39.75
5.58	Leucophyllum Frutescens 45 cm to 60 cm ht.	Each	219.58
5.59	Leucophyllum Frutescens 75 cm to 90 cm ht.	Each	418.22
5.60	Loropetalum	Each	182.97
5.61	Malpighia plants of ball shape of 60 cm to 75 cm ht.	Each	3659.62
5.62	Malpighia plants of conical shape of 160 cm to 180 cm ht.	Each	5750.81
5.63	Mandevilla creeper	Each	360.72
5.64	Murraya Dwarf	Each	235.25
5.65	Pedilanthus variegated	Each	47.03
5.66	Pedilanthus variegated	Each	65.89
5.67	Plumeria Pixi	Each	1882.08
5.68	Plumeria Pong Pong	Each	1547.50
5.69	Syzygium myritifolium (Eugenia oleina) having 45 cm to 60 cm height	Each	219.58
5.70	Syzygium myritifolium (Eugenia oleina) having 90 cm to 120 cm height	Each	705.76
5.71	Tecoma Dwarf	Each	156.82
SUB HEAD : 6.0 GROUND COVER PLANTS			
6.01	Alpinia Variegated (three in one)	Each	112.20
6.02	Alternanthera species	Each	18.35
6.03	Asparagus Merrie	Each	51.02
6.04	Asparagus sprengeri	Each	19.36
6.05	Aspidistra	Each	35.72
6.06	Clerodendrum inerme of ht. 20 cm to 30 cm multi branched	Each	10.21

6.07	Clerodendrum inerme having ht. 25 cm to 30 cm multi branched	Each	20.38
6.08	Chlorophytum (Green)	Each	18.35
6.09	Chlorophytum-variegated	Each	18.35
6.10	Cuphea chinensis	Each	18.35
6.11	Dianella variegated	Each	28.56
6.12	Duranta Golden	Each	19.36
6.13	Euphorbia milli hybrid variety	Each	64.28
6.14	Euphorbia milli hybrid variety	Each	96.91
6.15	Ipomoea (Golden leaves)	Each	18.35
6.16	Iresine herbstii, of height 20 cm to 25 cm	Each	15.30
6.17	Iresine herbstii, of height 25 cm to 30 cm	Each	19.36
6.18	Juniperus prostrata	Each	28.56
6.19	Ophiopogon, Green/Black	Each	18.35
6.20	Ophiopogon jaburan (variegated) in 15 cm poly bag	Each	20.38
6.21	Ophiopogon jaburan (variegated) in 20 cm poly bag	Each	28.56
6.22	Portulacaria afra (Jade plant)	Each	28.56
6.23	Schefflera green	Each	27.54
6.24	Setcreasea purpurea	Each	18.35
6.25	Syngonium (Butterfly) variegated	Each	28.56
6.26	Syngonium golden	Each	28.56
6.27	Syngonium miniature dwarf	Each	38.77
6.28	Syngonium variegated	Each	19.36
6.29	Tradescantia	Each	19.36
6.30	Tradescantia zebrina	Each	18.35
6.31	Wadelia trilobata	Each	14.28
6.32	Alternanthera species	Each	12.25
6.33	Clerodendrum inerme	Each	7.16
6.34	Duranta Golden	Each	12.25
6.35	Ficus Mockland plant	Each	20.38
6.36	Iresine herbstii	Each	7.16
6.37	Wadelia trilobata	Each	6.10
SUB HEAD : 7.0 TREE PLANTS			
7.01	Acacia auriculiformis	Each	60.17
7.02	Adansonia digitata (kalp vricksh)	Each	243.81
7.03	Albizia lebbeck	Each	59.15
7.04	Alstonia scholaris	Each	60.17
7.05	Azadirachta indica (Neem)	Each	61.19
7.06	Bassia latifolia (Mahua)	Each	60.17
7.07	Bauhinia blakeana (Kachnar) height 120-150 cm.	Each	73.43
7.08	Bauhinia purpurea (Kachnar) height 150-165 cm.	Each	45.89
7.09	Bombax ceiba	Each	64.28
7.10	Bottle palm ht. 150-180 cm bottom girth 20-25 cm	Each	165.25
7.11	Bottle palm ht. 210-240 cm bottom girth 30-35 cm	Each	321.31
7.12	Bottle palm ht. 270-300 cm bottom girth 40-50 cm	Each	504.96

7.13	Butea frondosa (Flame of Forest)	Each	51.02
7.14	Callistemon lanceolatus	Each	61.19
7.15	Casuarina equisetifolia	Each	55.08
7.16	Cassia fistula (Amaltash)	Each	59.15
7.17	Cassia siamea	Each	61.19
7.18	Cassia javanica	Each	79.58
7.19	Cassia nodosa	Each	59.15
7.20	Ceiba pentandra	Each	61.19
7.21	Chorisia speciosa	Each	73.43
7.22	Chukrassia tabularis	Each	61.19
7.23	Dalbergia sissoo (Seasam)	Each	51.02
7.24	Delonix regia (Gulmohar)	Each	55.08
7.25	Erythrina indica	Each	59.15
7.26	Ficus benjamina (green)	Each	96.91
7.27	Ficus benjamina (green)	Each	165.25
7.28	Ficus benghalensis (Banyan)	Each	59.15
7.29	Ficus bengalensis (variegated)	Each	73.43
7.30	Ficus bengalensis krishna	Each	110.17
7.31	Ficus elastica Decora (Rubber plant)	Each	61.19
7.32	Ficus infectoria (Pilkhan)	Each	58.14
7.33	Ficus lyrata	Each	82.63
7.34	Ficus nuda height 120-135 cm	Each	110.17
7.35	Ficus nuda height 150-165 cm	Each	174.45
7.36	Ficus religiosa (Peepal)	Each	61.19
7.37	Ficus retusa	Each	110.17
7.38	Ficus shiela	Each	78.56
7.39	Fishtail palm ht. 150-180 cm bottom girth 15-20 cm	Each	183.60
7.40	Fishtail palm ht. 210-240 cm bottom girth 25-30 cm	Each	275.42
7.41	Fishtail palm ht. 270-300 cm bottom girth 40-50 cm	Each	504.96
7.42	Foxtail palm ht. 120-150 cm bottom girth 15-20 cm	Each	211.14
7.43	Foxtail palm ht. 180-210 cm bottom girth 25-30 cm	Each	440.68
7.44	Foxtail palm ht. 240-270 cm bottom girth 35-40 cm	Each	596.78
7.45	Grevillea Robusta (Silver Oak)	Each	45.89
7.46	Heterophragma adenophyllum (Marore fali)	Each	55.08
7.47	Ingla dulcis (Jungle Jalebi)	Each	73.43
7.48	Jacaranda mimosifolia	Each	55.08
7.49	Kigelia pinnata	Each	73.43
7.50	Lagerstroemia flosreginae	Each	110.17
7.51	Lagerstroemia thorelli	Each	112.20
7.52	Magnolia grandiflora	Each	348.86
7.53	Mangifera indica (Mango-grafted)	Each	51.02
7.54	Melia azedarach	Each	41.82
7.55	Michelia champa (Golden Champa)	Each	82.63
7.56	Milletia ovalifolia	Each	51.02
7.57	Millingtonia hortensis	Each	64.28
7.58	Mimusops elengi (Maulsri)	Each	69.36

7.59	Mimusops elengi (Maulsri)	Each	115.25
7.60	Nauclea cadamba (Kadam)	Each	61.19
7.61	Parkinsonia species	Each	41.82
7.62	Peltophorum species	Each	55.08
7.63	Phoenix sylvestris Roxb. (Wild date palm/khajur)	Each	596.78
7.64	Phyllanthus emblica (Amla)	Each	82.63
7.65	Pinus longifolia (Pinus)	Each	504.96
7.66	Pithecellobium dulce	Each	55.08
7.67	Plumeria acutifolia	Each	100.97
7.68	Plumeria acutifolia	Each	183.60
7.69	Plumeria alba height 120-135 cm	Each	110.17
7.70	Plumeria alba height 165-180 cm	Each	207.08
7.71	Plumeria alba dwarf	Each	688.56
7.72	Plumeria rubara	Each	367.25
7.73	Pongamia glabra (Papri)	Each	45.89
7.74	Polyalthia longifolia (Ashok) height 150-165 cm	Each	73.43
7.75	Polyalthia longifolia (Ashok) height 180-195 cm	Each	91.82
7.76	Polyalthia pendula (Ashok Pendula) height 150-165 cm	Each	73.43
7.77	Polyalthia pendula (Ashok Pendula) height 180-195 cm	Each	91.82
7.78	Pterospermum acerifolium (Kanak Champa)	Each	60.17
7.79	Putranjiva roxburghii	Each	41.82
7.8	Saraca indica (Sita Ashok)	Each	73.43
7.81	Schleichera trijuga (Kusum)	Each	64.28
7.82	Spathodea campanulata	Each	69.36
7.83	Eugenia jambolana (Jamun)	Each	71.40
7.84	Tabebuia sp.	Each	78.56
7.85	Tamarindus indica (Imli)	Each	73.43
7.86	Tecoma argentea	Each	71.40
7.87	Tectona grandis (Teak)	Each	100.97
7.88	Terminalia arjuna	Each	55.08
7.89	Washingtonia filifera palm stem ht. 90-105 cm	Each	367.25
7.9	Washingtonia filifera palm stem ht. 120-135 cm	Each	596.78
7.91	Conocarpus erectus of ht. 150-165 cm	Each	106.10
7.92	Conocarpus erectus of ht. 240-270 cm	Each	243.81
7.93	Ficus krishna	Each	127.50
7.94	Salix babylonica	Each	84.66
7.95	Terminalia mentaly	Each	561.06
7.96	Toona ciliata	Each	63.26
SUB HEAD : 8.0 SHRUBS			
8.01	Bauhinia acuminata	Each	41.82
8.02	Bauhinia tomentosa (yellow)	Each	40.81
8.03	Beloperone species	Each	36.74
8.04	Caesalpinia pulcherrima species	Each	40.81
8.05	Calliandra, emarginata	Each	32.63
8.06	Calliandra hybrida of height 75-90 cm	Each	42.84

8.07	Calliandra hybrida of height 105-120 cm	Each	82.63
8.08	Cassia biflora of height 45-60 cm	Each	41.82
8.09	Cassia biflora of height 60-75 cm	Each	51.02
8.10	Cassia biflora of height 90-105 cm	Each	91.82
8.11	Cassia laevigata of height 45-60 cm	Each	32.63
8.12	Cassia laevigata of height 60-75 cm	Each	36.74
8.13	Cestrum nocturnum (Raat ki Rani)	Each	35.72
8.14	Chandni dwarf	Each	32.63
8.15	Dombeya mastersii	Each	100.97
8.16	Euphorbia caracasana (bronze colour leaves) of height 60-75 cm	Each	36.74
8.17	Euphorbia caracasana (bronze colour leaves) of height 60-75 cm	Each	51.02
8.18	Euphorbia caracasana (bronze colour leaves) of height 90-105 cm	Each	96.91
8.19	Euphorbia pulcherrima (dark red double bracts)	Each	100.97
8.20	Euphorbia pulcherrima (dark red)	Each	55.08
8.21	Excoecaria bicolor of height 45-60 cm	Each	35.72
8.22	Ficus blackii (F.vivion)	Each	100.97
8.23	Ficus blackii (F.vivion) (bushy)	Each	229.53
8.24	Ficus reginold	Each	91.82
8.25	Ficus panda of height 30-45 cm	Each	32.63
8.26	Ficus panda of height 45-60 cm	Each	51.02
8.27	Ficus panda of height 60-90 cm	Each	165.25
8.28	Ficus panda of height 90-105 cm	Each	207.08
8.29	Ficus long Island	Each	41.82
8.30	Gardenia jasminoides	Each	45.89
8.31	Hamelia patens of height 30-45 cm	Each	18.35
8.32	Hamelia patens of height 60-75 cm	Each	45.89
8.33	Hamelia patens of height 90-105 cm	Each	91.82
8.34	Hamelia patens (Dwarf)	Each	35.72
8.35	Hibiscus rosasinensis of height 45-60 cm	Each	32.63
8.36	Hibiscus rosasinensis of height 60-75 cm	Each	41.82
8.37	Hibiscus rosasinensis of height 90-105 cm	Each	82.63
8.38	Hibiscus variegated of height 45-60 cm	Each	40.81
8.39	Hibiscus variegated of height 60-75 cm in 35 cm poly bag	Each	165.25
8.40	Hibiscus variegated of height 60-75 cm in 25 cm poly bag	Each	51.02
8.41	Jatropha multifida (red colour) of height 45-60 cm	Each	32.63
8.42	Jatropha multifida (red colour) of height 60-75 cm	Each	41.82
8.43	Largerstroemia indica of height 90-105 cm	Each	36.74
8.44	Largerstroemia indica of height 45-60 cm	Each	27.54
8.45	Malpighia coccigera of height 30-45 cm.	Each	45.89
8.46	Murraya exotica	Each	14.28
8.47	Murraya Koenigii spreng (Kadipatta/meetha neem)	Each	23.47
8.48	Mussaenda erythrophylla (Rosea)	Each	100.97
8.49	Nerium oleander (kaner) of height 45-60 cm	Each	27.54
8.50	Nerium oleander (kaner) of height 60-75 cm	Each	36.74

8.51	Nerium oleander (kaner) dwarf of height 30-40 cm	Each	35.72
8.52	Nerium oleander variegated of height 45-60 cm	Each	38.77
8.53	Nerium oleander variegated of height 60-75 cm	Each	55.08
8.54	Nyctanthes arbor-tristis (Hasingar)	Each	36.74
8.55	Plumbego capensis	Each	55.08
8.56	Putranjiva roxburghii of ht. 45-60 cm	Each	18.35
8.57	Putranjiva roxburghii of ht. 60-75 cm	Each	27.54
8.58	Tabernaemontana coronaria (Chandni single) of height 45-60 cm	Each	32.63
8.59	Tabernaemontana coronaria (Chandni single) of height 75-90 cm	Each	40.81
8.60	Tabernaemontana coronaria (Chandni single) of height 90-105 cm	Each	73.43
8.61	Tabernaemontana coronaria (chandni variegated) of height 45-60 cm	Each	41.82
8.62	Tabernaemontana coronaria (Chandni single) variegated of height 60-75 cm	Each	51.02
8.63	Tabernaemontana coronaria (Chandni single) veriegated of height 105-120 cm	Each	100.97
8.64	Tabernaemontana divaricata (Chandni double) of height 45-60 cm	Each	30.59
8.65	Tabernaemontana divaricata (Chandni double) of height 75-90 cm	Each	40.81
8.66	Tabernaemontana divaricata (Chandni double) of height 90-105 cm	Each	82.63
8.67	Tecoma gaudichaudi of height 45-60 cm	Each	32.63
8.68	Tecoma gaudichaudi of height 60-75 cm	Each	45.89
8.69	Tecoma gaudichaudi of height 90-105 cm	Each	100.97
8.70	Tecoma stans of height 45-60 cm	Each	41.82
8.71	Tecoma stans of height 60-75 cm	Each	55.08
8.72	Tecoma stans of height 90-105 cm	Each	110.17
8.73	Thevetia nerifolia of height 30-45 cm	Each	32.63
8.74	Thevetia nerifolia of height 60-75 cm	Each	41.82
8.75	Thuja compacta of height 45-60 cm	Each	60.17
8.76	Thuja compacta of height 75-90 cm	Each	119.36
8.77	Galphimia nitida of ht 20-25 cm	Each	21.44
8.78	Lemonia spectabilis	Each	40.81
8.79	Pittosporum tobira variegatum	Each	123.43
8.80	Tecoma capensis	Each	25.51
SUB HEAD : 9.0 CREEPER PLANTS			
9.01	Allamanda cathartic	Each	40.81
9.02	Allamanda violaceus	Each	42.84
9.03	Bignonia venusta (Golden shower)	Each	36.74
9.04	Bougainvillea	Each	35.72
9.05	Clerodendrum splendens	Each	27.54
9.06	Clerodendrum thompsonae	Each	40.81
9.07	Ipomoea purpurea (Morning glory)	Each	32.63
9.08	Jasmine grandiflorum (chameli)	Each	27.54

9.09	Jasmine humile (Yellow)	Each	28.56
9.10	Passiflora caerulea (Rakhi bel)	Each	45.89
9.11	Petra volubilis	Each	43.86
9.12	Quisqualis indicia	Each	23.47
9.13	Tecoma grandiflora	Each	36.74
9.14	Vernonia elaegnifolia (curtain creeper)	Each	23.47
9.15	Bigonia gracilis creeper (yellow)	Each	86.69
9.16	Jacquemontia violacea	Each	37.75
9.17	Mandevilla	Each	106.10
9.18	Thunbergia mysorensis	Each	91.82